PROGRAMME OUTCOME OVERVIEW

Of

LADY BRABOURNE COLLEGE, KOLKATA

AFFILIATED TO THE UNIVERSITY OF CALCUTTA

Lady Brabourne College is an educational institution disseminating knowledge for General Degree of M.A & M.Sc and B.A & B.Sc as per the Syllabus structured and approved by the affiliating University, the University of Calcutta (CU).

VISION OF THE INSTITUTION: Woman empowerment. The idea is to open dissemination of the CU syllabus to a wide cross section of women learners and prepare them

a) for independent thinking and decision making process as future young Indians
b) for pursuing Higher Education
c) for immediate employment in case of certain stakeholders

VISION IMPLEMENTATION PLAN

- The Institution tries to fulfill this objective within the framework of the structured CU Syllabus.
- All the departments of the College dedicate themselves to the overall vision.
- The dissemination process simultaneously remains vigilant to strengthen the pure knowledge base of each specific discipline so that academic proficiency pursues a continuous upward curve.

REFERENCE POINTS

a) Participative outcomes in seminars, workshops, educational excursions
b) Rank List [http://www.ladybrabourne.com/AQARNEW/AQAR2017-18/Ranklist2017-18]
c) Career Counselling cell

Department of English

Model Reference: University of Calcutta, Syllabus for English (Honors) (NON-CBCS)

Programme Outcome Nos	**Programme Outcome (PO)**
PO A	• To acquaint learners with advanced level knowledge of English as language of literatures, of philosophy of Literatures in English, of English as basis for Skill Enhancement
PO B	• To acquaint learners with cultural context of British Literature • To acquaint learners with the source/origin of medium of communication called English including a basic knowledge of its unique phonetic character. Reference Paper I
PO C	• To acquaint learners with advanced level generic literature of the United Kingdom as source of English literature: Reference Papers II.III,IV, V & VII
PO D	• To acquaint learners with usage of English as medium of comprehension and imaginative/speculative exposition. The expectation and aim of the learning process is focused on Skill-Enhancement. Reference Papers II, VI
PO E	• Introducing learners to advanced level writing of other cultures using English Language as medium. • Acquaintance with a) Indian Writing in English b) American Literature c) Post Colonial Literature

Programme Specific Outcomes Nos	Programme Specific Outcomes (PSO)
PSO 1	• To be able to understand the importance of language as the fundamental basis of the art and skill of communication. • To realize that language is evidence of the dynamic thought process of the human mind and indispensable to the birth, progress and evolution of human civilization. • To be able to relate culture to language and prepare the mind to absorb the necessity of linguistics and culture theories in advanced level education in future.
PSO 2	• To explore and understand generic categorization of communication. • Such exploration trains the mind in keen observing of human response to the living experience and distinguishes between various levels of sensitivity and intelligence. • The learner's mind becomes equipped to make the correct choice of genre for communicating his thought and this ensures clarity of expression.
PSO 3	• Hands-on training in functional use of the language empowers the learner to make language pliant and significant so that it adapts to the specific context. • Training in Prosody tunes the learner's listening ability to alterations in infections in human voice and prepares the learner to become sensitive to democratic understanding. This is one of the most valuable outputs of the course to prepare the learner to live a meaningful life in polyglot society.
PSO 4	• To be able to learn the character and aspiration of other subaltern cultures and see their progression towards becoming dominant cultures. The learner lives through the experience of epic human journeys and this broadens both knowledge and mind to make for holistic vision.

Mapping of PO & PSO for English Honors Syllabus of 2017-18 of CU.

PSO	PO				
	A	**B**	**C**	**D**	**E**
1	√	√		√	
2	√		√	√	√
3	√	√		√	
4	√			√	√

Programme Outcome for Partial Semester wise Courses in English Honours under University of Calcutta

TABLE I

COURSE DURATION	**COURSE DETAIL**	**PROGRAMME OUTCOME (PO)**				
		A	**B**	**C**	**D**	**E**
PART I 2018 Hons Papers 1 & 2	Group A- Hist of Lit OE to 1700	√	√			
	Group B- Hist of Lit 1701-2000	√	√			
	Group A &B - Philology	√				
	Group A - 19th century Romantic Poetry	√	√	√	√	
	Group B Rhetoric	√	√		√	
	Group C- Victorian Poetry	√	√	√	√	
	Group D- Modern Poetry	√	√	√	√	
	Group E- Prosody	√	√		√	

TABLE II

COURSE DURATION	**COURSE DETAIL**	**PROGRAMME OUTCOME (PO)**				
		A	**B**	**C**	**D**	**E**
PART II 2019 Hons Papers 3 & 4	Group A- Elizabethan Drama- Marlowe & Shakespearean Comedy	√	√	√	√	
	Group B- Literary Terms on Drama	√	√	√	√	
	Group C -18th century Drama- Sheridan Shakespearean Tragedy	√	√	√	√	
	Group A – Novel Early 19th Century- Austen /George Eliot	√	√	√	√	
	Group B – Essays-Bacon, Lamb, George Orwell	√	√	√	√	
	Group C- Literary Terms on Fiction	√	√	√	√	
	Group D- Modern Short Stories	√	√	√	√	
	Group E- Substance Writing	√	√		√	

TABLE III (i)

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)				
		A	**B**	**C**	**D**	**E**
PART III **2020** **Hons Papers 5 & 6**	Group A- Shakespeare's Sonnets	√	√	√	√	
	Group B- Metaphysical Poetry	√	√	√	√	
	Group C- Neo Classical - Milton	√	√	√	√	
	Group D-Neo Classical- Pope	√	√	√	√	
	Group E Ref to the context (RTC)	√	√		√	
	Group E- Knowledge of Literary Terms	√	√	√	√	
	Group A- Novel- Dickens or Hardy	√	√	√	√	
	Group B- Miscellaneous Writing skills-Report, Film Reviews, Book reviews, Dialogue	√	√	√	√	
	Group C- Essay	√	√	√	√	
	Group D- Summary & Critical note on unseen passage	√	√	√	√	

TABLE III (ii)

COURSE DURATION	**COURSE DETAIL**	**PROGRAMME OUTCOME (PO)**				
		A	**B**	**C**	**D**	**E**
PART III **2020**	Drama- Osborne/Wesker, Shaw & Synge	√	√	√	√	√
	Group B- Literary Types- Tragedy, Novel, Epic, Comedy	√	√	√	√	√
Hons Papers **7& 8**	Optional Course I- Indian Writing in English (including IndianWriting in English Translations)	√	√	√	√	√
	Optional Course II-American Literature	√	√	√	√	√
	Optional Course III-Post Colonial Literatures in English	√	√		√	√

DEPARTMENT OF ENGLISH

POST GRADUATE SECTION

AFFILIATED TO THE UNIVERSITY OF CALCUTTA

- **The Course entitled M.A in English Literature ran successfully from August 2009 to August 2019 in the Department of English Post Graduate Section with academic autonomy from the affiliating University, the University of Calcutta. The Syllabus was designed by the Faculty of English under guidance of the Expert Committee appointed for that purpose. The time line of AQAR 2017-18 rightfully includes the Syllabus of the autonomous course.**
- **The CBCS course under the academic control of the University of Calcutta came into force from August 2018. The First Batch of PG students following the CBCS Course is awaiting Semester IV examination. Therefore it is premature to indicate the impact of projected POs & PSOs in the CBCS syllabus designed by the University of Calcutta.**

Model Reference: University of Calcutta, Syllabus for Autonomous Course M.A. in English Literature in effect from 2009-2018-19

Programme Outcome Nos	Programme Outcome (PO)
PO A	• To acquaint learners with advanced level knowledge of English as language of literatures, of philosophy of Literatures of the World in English, of English as basis for Skill Enhancement- Reference Papers-All
PO B	• To acquaint learners with cultural context of Literatures and Philosophy of Literatures of the World from Antiquity to Post Modern times in the form of translation of Latin, Greek, French, German Spanish etc into English and also Vernacular English Texts. • To acquaint learners with the evolution of civilized thought using English as medium of course communication embracing aesthetic, political, literary, sociological, visual reference points in the form of textual and extra-textual expressions.- All Papers
PO C	• To acquaint learners with advanced level generic literature of the World. • The learner is able to compare and contrast the handling of genres by diverse cultures and appreciate how unique culture specific perspective relates to abiding perspective of civilized thought. –All Papers • The learner is encouraged to relate abstract thought to living literature and sensitized to the many aspects of Reality. Special Reference Papers IV,V, VI.
PO D	• To acquaint learners with usage of English as medium of comprehension and imaginative/speculative exposition. The expectation and aim of the learning process is focused on in- depth Literary and Film Appreciation and development in original thinking constituting sophisticate Skill-Enhancement. Reference Papers-All. Special Reference-Paper IV &Paper VIII
PO E	• Introducing learners to advanced level writing of specific cultures using English Language as medium. • Acquaintance with d) Indian Writing in English

	e) American Literature f) Post Colonial Literature
PO F	• Introducing Learners to audio-visual interpretation of Literary Texts. • The learner is exposed to appreciate the distinctive language of a literary text and a film script. • In the next stage the learner is encouraged to apply the knowledge gained to writing of scripts and making comparison with well known film scripts. Reference Paper VIII Module 7.2 Option C

Programme Specific Outcomes Nos	**Programme Specific Outcomes (PSO)**
PSO 1	• To be able to understand the importance of interrelationship between media of communication ranging from oral, written, visual. • To realize that language is evidence of the dynamic thought process of the human mind and indispensable to the birth, progress and evolution of human civilization. • To be able to relate culture and philosophy to language and prepare the mind to absorb the necessity of linguistics and culture theories for pursuing M.Phil, PhD, MBA & diverse careers in Media & Communications.
PSO 2	• To explore and understand generic categorization of communication. • Such exploration trains the mind in keen observing of human response to the living experience and distinguishes between various levels of sensitivity and intelligence. • The learner's mind becomes equipped to make the correct choice of genre for communicating his thought and this ensures clarity of expression.
PSO 3	• The course design motivates learners to connect theory/philosophy with praxis. The learner is thus able to realize the relation between abstract though and vital experience. This exposure empowers the mind with holistic perceiving power.
PSO 4	• The Course encourages students to initiate research to produce original evaluation of culture texts. The learner is exposed to sophisticated level of speculative and compositional skills. • This aspect also inculcates an ability to translate pointed observation into concise expression and expands the scope of the course beyond literary analysis, film scripting into web content writing, web designing and even provides basic training for certain job profile in business administration.
PSO 5	• To be able to learn the character and aspiration of other subaltern cultures and see their progression towards becoming dominant cultures. The learner lives through the experience of epic human journeys and this broadens both knowledge and mind to make for holistic vision. • The course design emphasizes Indian Writing in English to deeply acquaint the learner with this unique cross cultural perspective of living experience unique to the Indian Sub-Continent and its challenging demography and history.

Mapping of PSOs and POs of the University of Calcutta, Syllabus for Autonomous Course

M.A. in English Literature in effect from 2009-2018-19

PSO	PO					
	A	**B**	**C**	**D**	**E**	**F**
1	√	√	√	√	√	√
2	√	√	√	√		
3	√	√	√	√		
4	√	√	√	√	√	
5	√	√			√	√

TABLE I

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)					
		A	**B**	**C**	**D**	**E**	**F**
SEMESTER I 2018 (Feb) Courses 1 & 2 Modules 1.1,1.2. 2.1.2.2	Mod 1.1 Gr. A Medieval Literature	√	√	√	√		
	Group B- Chaucer	√	√	√	√		
	Mod 1.2 Group A- Renaissance Thought	√	√	√	√		
	Group B – Renaissance Poetry	√	√	√	√		
	Mod 2.1 Gr. A-Classical Thought & Poetry	√	√	√	√		
	Group B- Classical Drama- Tragedy & Comedy	√	√	√	√		
	Mod 2.2 Gr. A Shakespearean Tragedy & History	√	√	√	√		
	Group B- Shakespearean Comedy	√	√	√	√		

TABLE II

COURSE DURATION	**COURSE DETAIL**	**PROGRAMME OUTCOME (PO)**					
		A	**B**	**C**	**D**	**E**	**F**
SEMESTER II 2018 (July)	Mod 3.1 Gr. A 17th to 19th Century Thought	√	√	√	√		
	Group B-17th to 19th century Fiction	√	√	√	√		
Courses 3 & 4 Modules 3.1,3.2. 4.1.4.2	Mod 3.2 Group C-17th to 19th century Poetry	√	√	√	√		
	Group D – 17th to 19th century Drama	√	√	√	√		
	Mod 4.1 Gr. A-Victorian Thought	√	√	√	√		
	Group B-Victorian Poetry	√	√	√	√		
	Mod 4.2 Gr. C Victorian Fiction	√	√	√	√		
	Group D-Term Paper on any one-Sensation Novel, Newgate fiction, Psychological Novel, Popular Fiction, Fanatasy Literature	√	√	√	√		

TABLE III

COURSE DURATION	**COURSE DETAIL**	**PROGRAMME OUTCOME (PO)**					
		A	**B**	**C**	**D**	**E**	**F**
SEMESTER III 2019 (Feb)	Mod 5.1 Gr. A –Modern to Post Modern thought	√	√	√	√		
	Group B- Modern & Post Modern Poetry	√	√	√	√		
Courses 5 & 6 Modules 5.1,5.2. 6.1,6.2	Mod 5.2 Group C- Modern & Post Modern Fiction	√	√	√	√		
	Group D – Modern & Post Modern Drama	√	√	√	√		
	Mod 6.1 Gr. A-Feminist Literary Theory	√	√	√	√	√	
	Group B- Feminist Texts	√	√	√	√	√	
	Mod 6.2 –Post Colonial Theory & Cultural Studies- Eurocentricism to Globalization	√	√	√	√	√	

TABLE IV

COURSE DURATION	**COURSE DETAIL**	**PROGRAMME OUTCOME (PO)**					
		A	**B**	**C**	**D**	**E**	**F**
SEMESTER IV 2019 (June/July) Courses 7 & 8 Modules 7.1,7.2. 8.1,8.2.	Mod 7.1Indian Writing in English, Gr. A –Non fiction, novels, short stories	√	√	√	√		
	Group B- Indian Writing in English, Poetry	√	√	√	√		
	Group C- Indian Writing in English- Drama	√	√	√	√		
	Mod 7.2 – Optional Course I- American Literature	√	√	√	√		
	Optional Course II-Post Colonial Literatures	√	√	√	√	√	
	Optional Course III- Literary Texts & Visual Transformation	√	√	√	√	√	√
	Mod 8.1- Modern Western Classics in Translation – Poetry, Fiction, Drama	√	√	√	√	√	
	Mod 8.2- Dissertation & Viva Voce	√	√	√	√		

Department of History

Model Reference: University of Calcutta, Syllabus for History (Honours) (NON-CBCS)

Programme Outcome Nos	**Programme Outcome (PO)**
PO A	• Introducing learners to theoretical discourses and in-depth studies in History with reference to sources.
PO B	• To acquaint the students with the political, social, economic and cultural history of Indian subcontinent and the world, like the History of Europe and of East Asia.
PO C	• To enable learners to have varied experiences of human journeys from the prehistoric times to the contemporary world highlighting the transition from ancient to medieval to modern period.
PO D	• To acquaint learners with the varied openings of future research activities in archaeology, archival studies and museology with the main courses of Historical studies.

Programme Specific Outcomes Nos	**Programme Specific Outcomes (PSO)**
PSO 1	• To be able to understand the importance of sources as primary material of reconstructing the past; • To realize that history is a dynamic thought process which is based on the outcome of continuous research and excavations of archaeological sites as well as different interpretations on the progress and evolution of human civilization.
PSO 2	• To explore and understand different trends and trajectories in the history of India and the world across the centuries. • To enable the learner to study maps and visit museums for a clear understanding of places and artifacts.
PSO 3	• To equip the learner with a skill to determine the present and shape the future on the basis of the knowledge of the past. A good student of history with the awareness of a global citizen can pursue a career of researcher, archaeologist, museologist, and with leadership qualities can become a manager or administrator or even of a tour guide. This career option is one of the most valuable outputs of the course.
PSO 4	• To be acquainted with front level ICT tools for Seminar presentation.

Mapping of PO & PSO for History Hons Syllabus of CU.

PSO	PROGRAMME OUTCOMES				
	A	**B**	**C**	**D**	
1	√	√	√	√	
2	√	√	√	√	
3	√	√	√	√	
4	√	√	√	√	

Programme Outcome for Partial Semester wise Courses in History Honours under University of Calcutta

TABLE I

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME			
		A	**B**	**C**	**D**
PART I **2018** **Hons, Paper 1**	Group A- Early Indian Hist – Political	√	√	√	
	Group B-Early Indian Hist – Social,Religious,Economic & Cultural	√	√	√	
Hons Paper 2	Group A –Hist of India (600-1200)	√	√	√	√
	Group B – Hist of India (1200-1500)	√	√	√	√

TABLE II

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME			
		A	**B**	**C**	**D**
PART II **2019** **Hons Paper 3**	Group A-Transformation of Europe (15^{th}-17^{th} centuries)	√	√	√	√
	Group B- Transformation of Europe (15^{th}-17^{th} centuries)	√	√	√	√
Hons Paper 4	Group A- Hist of India (1500-1750)	√	√	√	√
	Group B – Hist of India (1500-1750)	√	√	√	√

TABLE III (i)

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME			
		A	**B**	**C**	**D**
PART III 2020 **Hons paper 5**	Group A-Hist of East Asia (1839-1950) China	√	√	√	√
	Group B- Hist of East Asia (1839-1950) Japan	√	√	√	√
Hons Paper 6	Group A – Hist of India (1750-1885)	√	√	√	√
	Group B – Hist of India (1885-1964)	√	√	√	√

TABLE III (ii)

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME			
		A	**B**	**C**	**D**
PART III **2020** **Hons Paper** **7**	Group A -Hist of Europe (1789-1848)	√	√	√	√
	Group B-Hist of Europe (1848-1919)	√	√	√	√
Hons Paper **8**	Group A – World politics in the 20th Century	√	√	√	√
	Group B - World politics in the 20th Century	√	√	√	√

Department of Bengali

Model Reference: University of Calcutta, Syllabus for Bengali Literature (Hons) (NON-CBCS)

Programme Outcome Nos	**Programme Outcome (PO)**
PO A	• To acquaint learners with advanced level knowledge of Bengali as language of literatures, of philosophy of literatures in Bengali, of Bengali as basis for skill enhancement
PO B	• To acquaint rhetoric and metre of poetry to reveal the full form of literature Reference Paper: Paper 1 (Module 3), Paper 2 (Module 1 and 2)
PO C	• To grow interest in learners' mind about the relationship between theory and literature Reference Paper: Paper 3, 4, 5, 7 (Module 1 each)
PO D	• To acquaint learners stylistics of poetry Reference Papers: Paper 5 (Module 6)
PO E	• Introducing learners to acquaint with other literatures: a) Hindi (literature, history of literature and literary works as poem and short story) b) English (history of literature) c) Sanskrit (history of literature) Reference Paper: Paper 8 (Module 1,2,3)
PO F	• Writing essay on Bengali literature to encourage the students' creative mind and skill enhancement Reference Papers: Paper 7 (Module 6)

Programme Specific Outcomes Nos	Programme Specific Outcomes (PSO)
PSO 1	• To be able to understand the importance of the language as the fundamental basis of literature, connected with the evolution of human thought and civilization. • To be able to relate society and literature together and make the learners' mind equipped to the idea that literature also has a definite root of socio-economic background, not only the God-gifted genius. This realization makes the learners' mind analytical, scientific, reasonable and this clarity of mind helps him/her in advanced level education/resarch work in future.
PSO 2	• Knowledge of prosody and rhetoric awaken the learners' realization of literature's completeness from that point the wholeness of life itself. This philosophy of life prepare the learner to leave a meaningful life.
PSO 3	• History of literature and literary works of other languages help the learner to make an idea of comparative literature which in future helps him/her to proceed higher level of studies or research work. • Similarly, knowledge of stylistics is also necessary for learner to proceed his/her studies to linguistic department.
PSO 4	• Writing essay is very necessary for a student of literature because it can illuminate the power of imagination and skill of expression of the learner and thus explicate his/her latent power of a successful writer.

Mapping of PO & PSO for Bengali Hons Syllabus of CU.

PSO	PO					
	A	**B**	**C**	**D**	**E**	**F**
1	√	√	√			
2	√	√	√		√	
3	√		√	√		
4	√		√			√

DEPARTMENT OF BENGALI

POST GRADUATE SECTION

AFFILIATED TO THE UNIVERSITY OF CALCUTTA

The course entitled M.A in Bengali Literature is running successfully from September 2014 till date. During this period, the college obtained the power of autonomy regarding P.G. So, it includes the syllabus of autonomous course guided by BOS committee.

Programme Outcome Nos	**Programme Outcome (PO)**
PO A	• To acquaint learners with advanced knowledge of Bengali as language of literatures, of philosophy of literatures and Bengali as basis for skill enhancement Reference Papers: All
PO B	• To acquaint learners with advanced knowledge of Linguistics Reference Papers: Sem 1, Sem 2 (Unit 1 for both)
PO C	• To acquaint learners the Literature of Bengali from the beginning to modern poems, novels, short stories and essays of eminent writers (From 10^{th} Century to 20^{th} Century) Reference Papers: Sem 1, Sem 2 (unit 2, 3, 4 for both)
PO D	• To acquaint learners about the vast literature of Rabindranath Tagore – the world famous writer of Bengali literature • Learners get knowledge of eastern and western types of criticism and literary works. Reference Papers: Sem 3 (Unit 1, Unit 2)
PO E	• The learners can choose one special paper among novels and short stories, Rabindra literatures and dramas Reference Papers: Sem 3 (Unit 3)
PO F	• Two unique ideas reflect in the syllabus – one Educational tour (Sem 2), other to know history of printing technology and evolution of Bengali letters which includes technique of book-making. Modes and purpose of research work also have been included in this unit of 4^{th} Semester. A short form of research work and oral test taken by the Professors of other Universities were two important parts in this unit. Reference Papers: Sem 4 (Unit 1, 2)

Programme Specific Outcomes Nos	Programme Specific Outcomes (PSO)
PSO 1	• To enable the learners to relate cultures and evolutions of human civilization with linguistics. Specially, Phonetic transcription of Bengali phonetics to IPA (International Phonetic Alphabet) trains the learners' listening ability and helps to acquaint similarity of IPA with that of Bengali language. • Students' can take linguistics for pursuing M.Phil, Ph.D or other diverse careers. • As the learners get opportunity to study the Bengali literature from beginning to modern age, it gives them the idea of vastness and diversity of Bengali literature. The social and cultural evolution also become clear to the learners which grows clarity in thought and synthetical outlook of criticism. • Special paper is very much important for their future study i.e. M.Phil and research work.
PSO 2	• Educational tour opr field work helps them to select Folklore or Folktales as the theme of research and acquire practical knowledge about the Indian culture at it's root.
PSO 3	• History of printing technology, evolution of Bengali letters and technique of book making are deeply related to the learners' profession. Writings about field work make their mind full of arranged thoughts and pictures of the tours (temples, historical places etc) develop the observation power of learners. Syllabus about research work undoubtedly guides them for their future research work.
PSO4	• Knowledge of media specially languages of newspaper/ advertisement/ mass media also open the area of profession to the learners.

Mapping of PO & PSO for Bengali Honours Syllabus of 2017-18 of CU.

PSO	PO					
	A	**B**	**C**	**D**	**E**	**F**
1	√	√	√	√	√	
2	√		√	√	√	√
3	√			√		√
4	√	√				√

Department of URDU

Model Reference: University of Calcutta, Syllabus for Urdu (Honours) (NON-CBCS)

Programme Outcome Nos	**Programme Outcome (PO)**
PO A	• To provide the knowledge of the major traditions of literatures written in the national and international language like Hindi,Punjabi,Gujri and English etc for the diversity of literary and social voices within and sometimes marginalized by those traditions.To acquaint to read and appreciate various forms of literature • To create the basic and essential knowledge of Urdu language,literature with its terms.theories and devices and to impart the knowledge of the Urdu prose,poetry,fiction and critism. • To provide many words and meanings in literary texts to identify the difference between literary language and ordinary language. • Reference Paper 1&VIII
PO B	• To Acquaint the knowledge of Urdu language, literature on the background of its social and cultural history and understand the different views about Urdu language. Reference Paper I&VIII • To acquaint the learners with different movements which influence the Urdu literature such as Sir sayed Tahrik, Taraqqi pasand tahrik (Progressive movement), jaded tahrik ,Modernism and post modernism in Urdu poetry and learn famous Urdu ghazals poet,their poetry and its special features : Reference Paper I,VII &VIII
PO C	• To teach and create knowledge of the Urdu poetry and its various kinds Specially Urdu ghazal and Nazm as well as Marsiya,Qasida and Masnawi: Reference Paper I,IV&V
PO D	• To acquaint learners with the essence of Urdu prose,Dastan,Novel, Short Stories and Drama, and to create interest in prose such as letterwriting,eassy ,biography and sketch story and Learn about the major contribution of famous Urdu writers. • To impart the knowledge about the origin and development of literary criticism and to analyse prose and poetry: Reference Paper II,III&VI
PO E	• To acquaint the creativity in constrcting different literary forms and provide the arts and style of writing easy in Urdu and learn about Urdu mazamin: Reference Paper MIL (Urdu Compulsory)

Programme Specific Outcomes Nos	Programme Specific Outcomes (PSO)
PSO 1	• To be able to get knowledge about history of Urdu literature,its meaning and importance of major Urdu dialects. • To understand the different views and expansion about Urdu language and know about with its historical perspective. • To develop an ability to read texts in relation to their historical and cultural contexts, in order to gain a richer understanding of texts and context, and become more aware of themselves historically and culturally.
PSO 2	• To develop awareness about life through the study of Urdu literature and to know the sensitivity and respect towards the Urdu literature. • To design solutions for the problems to meet the specified needs with appropriate consideration for the cultural,social and environmental well being. • To learn to communicate effectively with society and are able to comprehend and write effective reports and design documentation,also make effective presentation and give and receive clear instruction,understand the importance of critical thinking,social interaction,effective citizenship,ethics,environment and sustainability and to acquire the ability to engage in independent and life-long Learning.
PSO 3	• To know about the syncretic genius and importance of Urdu culture,language and literature and to create the love and respect for values especially human values. • To gain the basic and essential knowledge in their language and to develop awareness about life through the study of Urdu literature.
PSO 4	• To be able to ignite the passion for learning teaching and employability based on human utility. • To be able to ignite the sense of elegance,dignity,magnanimity& delicacy and to spread awareness about the syncretic and synergetic genius and importance of Urdu culture& literature, • To promote and protect the creativity and originality and to promote communicative skills to become successful in the market and society.

Mapping of PO & PSO for Urdu Honours Syllabus of CU.

PSO	PO				
	A	**B**	**C**	**D**	**E**
1	√	√	√	√	√
2	√	✓		√	√
3	√	√			✓
4	√	✓	✓	√	

Department of Persian

Model Reference: University of Calcutta, Syllabus for Persian (Honours) (NON-CBCS)

Programme Outcome Nos	**Programme Outcome (PO)**
PO A	• To acquaint learners with basic and advanced level knowledge of Persian as language of literatures, of philosophy of Literatures in Persian, of Persian as basis for Skill Enhancement
PO B	• Grammar is also essential for understanding Persian as a language as well as for learning a new language, since all languages follow grammatical patterns • Translation is necessary for the spreading new information, knowledge, and ideas across the world. It is absolutely necessary to achieve effective communication between different cultures. It is the only medium by which learners can know different works that will expand their knowledge of the world. • To acquaint with text to develop language skills as speaking, writing, and reading Reference Paper I , II &III
PO C	• To acquaint abilities like critical reasoning, appreciation of texts, value education and all those qualities that contribute to the substantial development of learners • To acquaint learners with cultural and ethical context of Persian Literature • To develope with the aims to equip the students with the linguistic, language and literary skills for meeting the growing demand of this discipline and promoting skill based education Reference Paper II,III,IV,V,VI, VII, &VIII
PO D	• To acquaint learners with usage of as medium of comprehension and imaginative/speculative exposition. The expectation and aim of the learning process is focused on Skill-Enhancement. • Reference Papers II & III
PO E	• Introducing learners to basic and advanced level writing of other cultures using Persian and English Language as medium of translation • ..Acquaintance with g) Indo-Iranian Culture h) Classical Literature i) (e) Modern Literature

Programme Specific Outcomes Nos	Programme Specific Outcomes (PSO)
PSO 1	• To be able to understand the importance of language as the fundamental basis of the art and skill of communication. • To realize that language is evidence of the dynamic thought process of the human mind and indispensable to the birth, progress and evolution of human civilization. • To be able to relate culture to language and prepare the mind to absorb the necessity of linguistics and culture theories in advanced level education in future.
PSO 2	• To explore and understand generic categorization of communication. • Such exploration trains the mind in keen observing of human response to the living experience and distinguishes between various levels of sensitivity and intelligence. • The learner's mind becomes equipped to make the correct choice of genre for communicating his thought and this ensures clarity of expression.
PSO 3	• Hands-on training in functional use of the language empowers the learner to make language pliant and significant so that it adapts to the specific context. • Training in Rhetoric & Prosody tunes the learner's listening ability to alterations in infections in human voice and prepares the learner to become sensitive to democratic understanding. This is one of the most valuable outputs of the course to prepare the learner to live a meaningful life in polyglot society.
PSO 4	• To be able to learn the character and aspiration of other subaltern cultures and see their progression towards becoming dominant cultures. The learner lives through the experience of epic human journeys and this broadens both knowledge and mind to make for holistic vision.

Mapping of PO & PSO for Persian Honours Syllabus of CU

PSO	PO				
	A	**B**	**C**	**D**	**E**
1	√	√		√	
2	√	√	√	√	√
3	√	√	√	√	√
4	√	√	√	√	√

Programme Outcome for Partial Semester wise Courses in Persian Honours under University of Calcutta

TABLE I

COURSE DURATION	**COURSE DETAIL**	**PROGRAMME OUTCOME (PO)**				
		A	**B**	**C**	**D**	**E**
PART I 2018 Hons Papers 1 & 2	Group A- Prose& Poetry Text(Modern)	√	√	√	√	
	Group B- Grammar(nouns)&Composition (Sentence making)	√	√	√	√	√
	Group C Translation: Persian to English	√	√	√	√	√
	Group A – Prose-Text(Classical)	√	√	√	√	√
	Group B - Grammar(verbs) & Composition(kinds of sentence)	√	√	√	√	
	Group C- Translation: English to Persian Persian to English	√	√	√	√	√

TABLE II

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)				
PART II		**A**	**B**	**C**	**D**	**E**
2018 Hons Papers 3 & 4	Group A- Poetry: Text(Classical)	√	√	√	√	
	Group B- Grammar &Composition – Tense (Applied)	√	√	√	√	√
	Group C Linguistics : Indo-Aryan Languages etc	√	√	√	√	√
	Group A – Prose: Text- Short Stories (Modern)	√	√	√	√	√
	Group B Poetry: Text(Modern)	√	√	√	√	√
	Group C- Translation Persian to English (Text)	√	√	√	√	√

TABLE III (i)

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)				
		A	**B**	**C**	**D**	**E**
PART III **2020**	Literary History of Iran (From the Beginning down to the fall of Qajars)	√	√	√	√	
Hons Papers 5 & 6	Iranian History and Culture (Political and Cultural History of Iran from the advent of Islam to the fall of Qajars)	√	√	√	√	√

TABLE III (ii)

COURSE DURATION	**COURSE DETAIL**	**PROGRAMME OUTCOME (PO)**				
		A	**B**	**C**	**D**	**E**
PART III **2020** **Hons Papers** **7& 8**	Group A Indo-Persian Literature (Sultanate &Mughal Period)	√	√	√	√	√
	Group B- Prose: Historical Text Poetry	√	√	√	√	√
	Group: C Rhetoric& Prosody	√	√	√	√	√
	Group A Persian Literature in Bengal Prose :Text	√	√	√	√	√
	Group B Poetry: Text	√	√		√	√

Department of Philosophy

UNDERGRADUATE SECTION

Model Reference: University of Calcutta, Syllabus for Philosophy (Honours) (NON-CBCS)

Programme Outcome No.s	**Programme Outcome (PO)**
PO A	• To improve the logical thinking and critical skills of the students. To enhance the ability to think logically and analyse as well as solve problems in a rightful way of thought. Also helps assess different proposed solutions considering probability and certainty in respective areas. To broaden the perspective of mental, moral ,social and religious life and thus benefit students, spiritually, intellectually and morally
PO B	• To introduce young minds to a few systems of Indian Philosophy to enhance their ability to think better and be more sensitive and tolerant to the thoughts of other people and systems. The skill to argue and debate is the need of the human of all times and philosophy provides the necessary tools for that. Moreover it compasses the whole field of life. Indian Philosophy refers to ancient philosophical traditions of the Indian subcontinent. The principal schools are introduced with a classification of orthodox and heterodox schools. Reference Paper I,V &VIII-F
PO C	• To acquaint learners with Psychology as the science of behavior and mind by trying to explore behavior and mental processes such as perception, cognition, attention, intelligence, personality and more such traits. Reference Paper II
PO D	• To enhance the knowledge of the learners regarding the philosophy of the society and politics. This aims to acquaint the learner with the varied societal forms and structures as well as with the different political ideals, justice, liberty and equality. Reference Papers II,VII
PO E	To acquaint learners with the rich variety of ancient, medieval, modern and contemporary western thought and its profundity looking on history of Western Philosophy. Reference Paper III & VI &VIII- B,C
PO F	To assimilate the diversity of information with which students are confronted both in the study of various disciplines and in their practical work. To develop the basis for reflection, analysis and formulation of the laws and forms of right way of thinking. Reference Paper IV, V &VIII-D

PO G	To acquaint students with different questions of life based on one's own experience and the experience of others and help them in a critical and systematic way to engage in moral philosophy. Students are encouraged to study three different types of questions within Ethics: normative, meta-ethics and practical ethics i.e. directly related with empirical matters. Reference Paper VII
PO H	To acquaint learners with philosophical study of meaning and nature of religion including analysis of religious concepts, beliefs, terms, arguments and practices of religious adherents. Different arguments for as well as against the existence of GOD are introduced and critically discussed. Reference Paper VII

Programme Specific Outcomes Nos	**Programme Specific Outcomes (PSO)**
PSO 1	• To be able to look at things with logical insight and develop impartial, wider, humane understanding of a situation which in the long run benefits a society. • To be aware of origins of ideas and concepts of our rich philosophical heritage. • To develop tolerance to other's views and assess /judge any theory with an open mind.
PSO 2	• To be able to have a scientific knowledge base in Psychology. • To generate awareness about scientific inquiry and critical thinking. • To enable learners to understand and engage in behavior patterns which are sound ethically and socially.
PSO 3	• To enhance the attitude awareness of learners as social beings • To encourage critical thinking regarding different socio-political movements. • To develop strong notion of freedom, duty and rights.
PSO 4	• To acquaint all of the major areas of philosophy as well as other relevant fields ,including theology, sociology, psychology history and the natural sciences. • To focus on religious language and belief, religious diversity, concepts of God/ Absolute Reality, arguments for and against the existence of God and problems of evil and sufferings and miracle.

Mapping of PO & PSO for Philosophy Honours Syllabus of CU.

PSO	PO							
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
1	√	√	√	√	√	√	√	√
2		√	√		√	√	√	√
3		√		√		√		
4	√	√	√	√	√	√	√	√

Programme Outcome for Partial Semester wise Courses in Philosophy Honours under University of Calcutta

TABLE I

COURSE DURATION	**COURSE DETAIL**	**PROGRAMME OUTCOME (PO)**							
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
PART I 2018 Hons Paper I	Unit I A,B,C,D INDIAN PHILOSOPHY(Nastika Schools)	√	√	√	√			√	√
	Unit II A,B,C,D Unit III A,B,C Unit IV A,B INDIAN PHILOSOPHY(Astika schools)	√	√	√		√		√	√
Honours Paper II	UNIT I A,B,C Methods of Psychology,Sensation and perception,Theories of Learning		√	√		√			√
	Unit II A,B,C Interactionism,Consciousness,Intelligence.		√	√		√			
	Unit IIIA,B,C,D A.Nature and Scope of social Philosophy,Political Philosophy,Relation between social and political philosophy.		√			√		√	√
	B. Basic concepts: Society,community,association, institution, family: nature,different forms and role in the society.		√	√		√		√	√
	C. Marxist conception of class.		√	√		√		√	√
	D. Theories regarding the relation between individual and society			√		√		√	√

	Unit IV A .Secularism							√	√
	B .Social Change			√				√	√
	C. Political Ideals								

TABLE II

COURSE DURATION	**COURSE DETAIL**	**PROGRAMME OUTCOME (PO)**							
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
PART II 2019 Honours Paper 3	Unit IA.B. Greek Philosophy	√			√	√			
	UNIT II A,B,CModern Western philosophy, Rationalists	√		√	√	√			
	Unit III A,B,C.Modern Western philosophy, Empiricists	√		√	√	√			
	Unit IV A. Immanuel Kant's philosophy.	√			√	√			
Honours Paper 4	Unit I A Logic and arguments	√					√		
	B. Immediate inferences	√					√		
	C. Categorical Syllogism	√					√		
	D. Boolean Intepretation of categorical propositions; Review of the Traditional Laws of Logic, Venn Diagram Technique for Testing Syllogisms	√					√		

	Unit II A,B,C,D Inductive Logic: It's nature , Causal Connections, Mill's Method of Experimental Inquiry, Science and Hypothesis, Probability: Alternative Conception of probability and probability calculus.	√					√		
	Unit III ABCD Symbolic Logic	√							
	Unit IV A,B Quantification Theory Quantification Rules and Proving Validity.	√					√		

TABLE III (i)

COURSE DURATION	**COURSE DETAIL**	**PROGRAMME OUTCOME (PO)**							
	Indian logic and epistemology	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**
	Unit I A .Definition and classification of knowledge.	√					√		
PART III **2020**	B. Division of prama and pramana, definition of cause and effect	√					√		
	Unit II. A. Definition and division of pratyaksa	√					√		
	B.Sannikarsa and its	√					√		

Hons. Paper 5	varieties problem of transmission of sound; the claim of 'anupalabdhi' as a distinct pramana examined.								
	Unit III. A. Definition and discussion of anumiti and its inevitable parts,vyapti etc.	√		√			√		
	B.Definition of paksadharmata,svarthanumiti and pararthanumiti,necessity of paramarsa.three kinds of hetu.Definition of paksa,sapaksa and vipaksa, marks of sadhetu.	√		√			√		
	C. Hetvabhasa	√		√	√		√		
	Unit IV. A "Upamana pramana", "Sabda pramana"	√		√			√		
	B.Saktigraha, laksana and its varieties. Analysis of "Gauni brtti', "Vyanjana-vrtti"	√		√			√		
	C. The question of laksana-bija –tatparya, The concept of "yoga-rudhi"The three conditions of "sabda-bodha".Two kinds of statements.	√		√			√		
	D-"Arthapatti"as a distinctive pramana : controversy between the Mimamsakas and the Naiyayikas	√					√		
	E. The theory of pramanya , Prabhakara theory of akhyati.	√					√		

TABLE III (ii)

COURSE DURATION	**COURSE DETAIL**	**PROGRAMME OUTCOME (PO)**							
PART III **2020** **Hons Paper** **6**	**The Philosophy of language, epistemology and metaphysics(Western)**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**
	Unit.I A B C Meaning and Definition	√		√		√	√		
	Unit. II Knowledge A, B, C Necessary Truth A,B,C	√		√		√	√		
	Unit III Empirical Knowledge A,B, C Causw,Determinism and Freedom A, B, C	√		√		√	√		
	Unit IV. Our Knowledge of the Physical World.A, B.	√		√	√	√	√	√	
	Some Metaphysical Problems c. Substance and Universal	√				√	√		
Hons. Paper 7	Ethics and Philosophy of Religion	A	B	C	D	E	F	G	H
	Unit. I Indian Ethics A, B, C	√	√					√	√
	Unit. II Western Ethics: A. Nature and Scope of Ethics. B. Standards of Morality, Utilitarianism, Deontological Theories C. Theories of punishment	√	√					√	√

	Unit. III Philosophy of Religion-I A. Nature and scope of Philosophy of Religion,Doctrine of karma and rebirth, doctrine of liberation B. The Philosophical teachings of the Holy Quoran:God ultimateReality,His attributes,His relation to the world and man C. Some basic tenets of Christianity: The doctrine of Trinity, The theory of Redemption.	√		√				√	√
	Unit. IV A. Arguments for the existence of God. B. Grounds for disbelief in God C. The peculiarity of Religious Language.								
Hons. Paper 8(optional Paper)		A	B	C	D	E	F	G	H
	A. Vedantasara(Text)	√	√			√		√	
	B. An Enquiry Concerning Human Understanding (Text)	√			√				
	C. The Problems Of Philosophy (Text)	√			√	√			
	D. Western Logic(Texts)	√					√		
	E. Ethics: Theory and Practice.		√	√			√	√	√
	F. Contemporary Indian Philosophy: Swami Vivekananda, Rabindranath Tagore, Sri Aurobindo and M.K.Gandhi	√	√	√			√	√	√

Department of Hindi

UNDERGRADUATE SECTION

Model Reference: University of Calcutta, Syllabus for Hindi (Honours) (NON-CBCS)

Programme Outcome Nos	**Programme Outcome (PO)**
PO A	• To acquaint learners with advanced level knowledge of Hindi in the Mediaeval Period of Indian history mainly the padas written in Braj and Awadhi,the two main dialects of the period. Reference Paper-I
PO B	• To acquaint the learners with the knowledge of the Art form Drama,One act play,Nukkar Natak of the Modern Hindi literature, starting from the Chhayawad yug. • To acquaint the learners with the variety of Prose forms of Aadhunik Kaal that is Nibandh,Lecture, Rekhachitra,Travelogue,Satire . Reference Paper-II
PO C	• To acquaint learners with the history of Hindi literature i.e Aadi,Madhya and Aadhunik kaal.Modern Hindi poetry. Reference paper-III,IV.
PO D	• To acquaint learners with Sahitya Siddhant and Modern criticism.to impart knowledge regarding other Indian literature such as,Urdu,Marathi,Tamil,Bengali.Hindi Linguistics,Official Hindi Reference paper-V,VI.
PO E	• Introducing learners to Hindi Stories,Novels.Hindi Patrakarita and Media.Project based on Media. Reference Paper-VII,VIII.

Programme Specific Outcomes Nos	**Programme Specific Outcomes (PSO)**
PSO 1	• To able to understand the importance of language as the fundamental basis of the art and skill of communication. • To enable the students to understand the importance of the Mediavel poets ,procure detail knowledge of the language so as to create an atmosphere of correlation with the linguistic pattern and culture of the period.To able to understand the modern prose forms and inculcate a view of comparison between the style and pattern of prose forms.
PSO 2	• To explore and understand generic categorization of communication. • Such exploration trains the mind in keen observing of human response to the living experience and distinguishes between various levels of

	sensitivity and intelligence. To enable the students to understand the origin and the entire journey of Hindi literature,so as to acquire an allround concept of various eras.To motivate the students towards the modern poetry and inculcate the seeds of literature and language in true sence.
PSO 3	• Hands-on training in functional use of the language empowers the learner to make language pliant and significant so that it adapts to the specific context. • To able to develop a conteptual outlook towards different literatures.To have a clear picture of official language Hindi.
PSO 4	• To be able to learn the character and aspiration of other subaltern cultures and see their progression towards becoming dominant cultures.To develop a clear outlook regarding the media.

Mapping of PO & PSO for Hindi Honours Syllabus of CU.

PSO	**PO**				
	A	**B**	**C**	**D**	**E**
1	√	√		√	
2	√		√	√	√
3	√	√		√	
4	√			√	√

Programme Outcome for Partial Semester wise Courses in Hindi Honours under University of Calcutta

TABLE I

COURSE DURATION	**COURSE DETAIL**	**PROGRAMME OUTCOME (PO)**				
		A	**B**	**C**	**D**	**E**
PART I 2018 Hons Papers 1 & 2	Group A-Mediaval Poetry(Bhaktikaal)	√	√			
	Group B-Mediaval Poetry(Ritikaal)	√	√			
	Group B-Ras,Alankar,Chhand	√				
	Group A -Drama,Ekanki,Nukkar Natak	√	√	√	√	
	Group -B-Nibandh	√	√		√	
	Group C-Rekhachitra	√	√	√	√	
	Group D- Yatrabritant	√	√	√	√	
	Group E-Atmakatha	√	√		√	

TABLE II

COURSE DURATION	**COURSE DETAIL**	**PROGRAMME OUTCOME (PO)**				
		A	**B**	**C**	**D**	**E**
PART II 2018 Hons Papers 3 & 4	Group A-History of Hindi Literature(Ancient &Mediaval)	√	√	√	√	
	Group B-History of Hindi Literature(Modern Period)	√	√	√	√	
	Group C -Hindi Gadya ka vikash	√	√	√	√	
	Group A –Purba chayawad yug ki kabitayen,Chayawadi kabitayen	√	√	√	√	
	Group B – Chayabadottar Kabitayen.	√	√	√	√	
	Group C-Pragatibadi kabitayen.	√	√	√	√	
	Group D-Prayogbadi kabitayen.	√	√	√	√	
	Group E-Nayi kabitayen.	√	√		√	

TABLE III (i)

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)				
		A	**B**	**C**	**D**	**E**
PART III **2020** **Hons Papers 5 & 6**	Group A- Sahitya Siddhant andModern Criticism.	√	√	√	√	
	Group B- Indian literature.	√	√	√	√	
	Group C- Bhasha Vigyan.	√	√	√	√	
	Group D- Prayojanmulak Hindi.	√	√	√	√	
	Group E - Terminology	√	√		√	
	Group E- Knowledge of Literary Terms	√	√	√	√	

TABLE III (ii)

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)				
		A	**B**	**C**	**D**	**E**
PART III **2020** **Hons Papers** **7& 8**	Group A-Stories and Novels.,	√	√	√	√	√
	Group B- Literary Types- Tragedy, Novel, Epic, Comedy	√	√	√	√	√
	Group-C-Hindi Patrakarita.	√	√	√	√	√
	GroupD- JanSanchar aur Media Lekhan.	√	√	√	√	√
	Group-E Project on Media and Patrakarita.	√	√		√	√

Department of Sanskrit

UNDERGRADUATE SECTION

Model Reference: University of Calcutta, Syllabus for Sanskrit (Honours) (NON-CBCS)

Programme Outcome Nos	**Programme Outcome (PO)**
PO A	• Offering learning opportunities to orient the students towards the scientific and humanistic study of the Sanskrit language.
PO B	• Creating a language environment for students to acquire the language skills assessed by their conversation and usage of the language.
PO C	• Help shaping cognitive, affective and behavioral abilities of students for building responsible academic professionals and researchers.
PO D	• Infusing the notion of Seva (service) in the students to be able to take part in social transformation.
PO E	• knowing the application of ancient Indian wisdom in contemporary problem solving situations. • Imparting knowledge of basic living and concepts from ancient literature which is timeless and still applicable to the society.

PSO Nos	**Programme Specific Outcomes (PSO)**
PSO 1	• To be able to understand the importance of language as the fundamental basis of the art and skill of communication. • Basic communication skills in understanding Sanskrit with LSRW (Listening, Speaking, Reading & Writing) capacities. • To be able to relate culture to language and prepare the mind to absorb the necessity of linguistics and culture theories in advanced level education in future.
PSO 2	• Skill adaptability in specific areas. • Usage of critical thinking while correlating concepts with personal experiences. • Usage of Shastric discipline and ancient traditional learning while discriminating others.
PSO 3	• Articulation of ideas, literary writing, innovations and effective presentation skills in Sanskrit as well as in other native Indian languages and English. • Building confidence to explore and study various Indian sciences. • Ability to explore ancient Indian sciences with confidence.
PSO 4	• Competency building to convey the society at large about Indic Knowledge and wisdom.

Mapping of PO & PSO for Sanskrit Hons Syllabus of CU.

PSO	PO				
	A	**B**	**C**	**D**	**E**
1	√	√		√	
2	√		√	√	√
3	√	√		√	
4	√			√	√

Programme Outcome for Partial Semester wise Courses in Sanskrit Honours under University of Calcutta

TABLE I

COURSE DURATION	**COURSE DETAIL**	**PROGRAMME OUTCOME (PO)**				
		A	**B**	**C**	**D**	**E**
PART I 2018 Hons Papers 1 & 2	Group A-General Grammar	√	√			
	Group B-Sanskrit Prose Kavya	√	√			
	Group A &B – Grammar & Prose Kavya	√				
	Group A -Prose Literature	√	√	√	√	
	Group B Natya-Abhijnanasakultalam	√	√		√	
	Group C-Rhetoric-Kavyalamkarasutravritti	√	√	√	√	
	Group D-Chandamanjari	√	√	√	√	
	Group E-Natya-Svapnavasavadattam.	√	√		√	

TABLE II

COURSE DURATION	**COURSE DETAIL**	**PROGRAMME OUTCOME (PO)**				
		A	**B**	**C**	**D**	**E**
PART II 2018 Hons Papers 3 & 4	Group A- General Introduction to Indian Peotology.	√	√	√	√	
	Group B- Introduction to Figures of speech.	√	√	√	√	
	Group C - History of Sanskrit works on Scientific and technical Literature	√	√	√	√	
	Group A – Vedic Literature.	√	√	√	√	
	Group B- History of Classical Sanskrit Literature.	√	√	√	√	
	Group C- Essay in Sanskrit	√	√	√	√	
	Group D- Bhattikavyam	√	√	√	√	

TABLE III (i)

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)				
		A	**B**	**C**	**D**	**E**
	Group A-Hymns of Rigveda.	√	√	√	√	
	Group B- Padapatha and general outline of Vedic Grammar.	√	√	√	√	
	Group C- Brahadaranyakopanisad.	√	√	√	√	
PART III	Group D- Manumatsyakatha.	√	√	√	√	
2020	Group E- Yajnavalkyasamhita	√	√		√	
Hons Papers 5& 6						
	Group- A-Manusamhita	√	√	√	√	
	Group-B- Arthashastra	√	√	√	√	
	Group C- Indroduction to Dharma,Artha and Nitishastra.	√	√	√	√	

TABLE III (ii)

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)				
		A	**B**	**C**	**D**	**E**
PART III	Sanskrit Grammar –	√	√	√	√	√
2020	Siddhantakaumudi-Karaka					
	Group B-Sanskrit Grammar - Siddhantakaumudi-Samasa.	√	√	√	√	√
Hons Papers	Introduction to Sanskrit Philology.	√	√	√	√	√
7& 8	General Introduction to Indian Philosophy.	√	√	√	√	√
	Tarkasamgraha of Annambhatta.	√	√		√	√

Department of Political Science

UNDERGRADUATE SECTION

Model Reference: University of Calcutta, Syllabus for Political Science (Honours) (NON-CBCS)

Programme Outcome Nos	**Programme Outcome (PO)**
PO A	• To acquaint learners with politics as a dynamic discipline and the radical changes that has occurred in its substance, theory and methods in recent decades. To be able to provide a 'launching pad' for learners seeking a clear grasp of the key methodological, theoretical and empirical issues, and the main areas of debate, in the complex and fragmented world of political science.
PO B	• To acquaint learners with the Indian Constitution and its political processes. • To acquaint learners with the structural questions of how the systems of institutions of the modern Indian state was formed, and how these institutions actually functioned over the last seventy three odd years since independence. Reference Paper 2
PO C	• To acquaint learners with the constitutional processes of different countries of the world with special emphasis on the constitutions of UK, USA and China; along with a minor coverage of the constitutions of countries like Switzerland and Bangladesh. Reference Paper 4
PO D	• To acquaint learners with the various conflicting and competing strands of Indian political thinkers right from ancient times to the present. • To acquaint learners, to a broader extent, with the Indian national freedom struggle launched by the Indian National Congress along with the ideas of the leading stalwarts of the times like Savarkar, Jinnah, Ambedkar, Subhas Bose, Phule etc. Reference Paper 3
PO E	• To acquaint learners with the study of International Relations both as a theoretical discipline as well as with the intricacies of global politics as it plays out all over the world today. • Acquaintance of learners also with India's International Relations and her Foreign Policies. Reference Paper 5
PO F	• To acquaint learners with the interdisciplinary nature of the subject matter of Political Science – its interaction with Sociology (a key sister discipline). • To attempt to equip learners with some of the following sub themes and issues related to the allied subject of Sociology that overlap with Political Science – like Political Culture, Socialisation, Caste, Class, Elites, Gender,

	Religion, Society etc. Reference Paper 6
PO G	• To acquaint learners with the proliferation of political thought in the Western world – beginning from ancient Greece and Rome (the lands of origin of classical western political thought) through medieval political thinkers whose innumerable contributions have set the stage for modern Western political thinkers of our times. • This will acquaint learners with the various 'isms' and ideologies like liberalism, justice, democracy etc. Reference Paper 7
PO H	• To acquaint learners with the 'actual' and 'practical' workings of government – How 'government in action' attempts to tackle the raging administrative crises in regimes all over the world. • Learners, through this programme, also get a detailed overview of the workings of the Indian State and its administrative apparatus as it grapples with plaguing problems like poverty, disease, unemployment and corruption. Reference Paper 8

Programme Specific Outcomes Nos	**Programme Specific Outcomes (PSO)**
PSO 1	• To be able to understand the 'actual' and 'practical' workings of politics and the way states, structures, systems, institutions and organizations around the world deal with the issues confronting them. • Such a study will help to understand that political thought, theory, thinking and ideologies in different countries take shape, and are to a great deal, influenced by the countries and regimes to which they belong.
PSO 2	• To explore the historical backgrounds and origins of contemporary thinkers and discourses. • Such historical exploration helps set the precedent for further understanding of the present.
PSO 3	• To learn the nature and ever-changing dynamics of the current world in which we live. • Such training will help learners understand the 'raison d'etre' of the policies, actions and manipulations of policy makers, leaders and decision makers in today's world.
PSO 4	• To be able to comprehend the inter-linkages between various social science disciplines and the way they come together to throw a better and more focused light on the problems man encounters in his day to day life.

Mapping of PO & PSO for Political Science Honours Syllabus of CU.

PSO	PO							
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
1	√	√	√	√	√	√	√	√
2		√	√		√		√	
3	√	√		√	√	√		√
4				√	√	√		√

Programme Outcome for Partial Semester wise Courses in Political Science Honours under University of Calcutta

TABLE I

COURSE DURATION	**COURSE DETAIL**	**PROGRAMME OUTCOME (PO)**							
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
PART I 2018 Hons Papers 1(Politics: Concepts and Approaches)	Paper I **<u>Group A-</u>** Module1- 1.1.1. Conceptualising politics: political. 1.1.2.Key concepts 1 -State; Nation; Sovereignty(evolution);Power and Authority-types and linkages; 1.1.3.Key concepts II-Law, Liberty, Equality-interrelationships Module II: 1.2.1.Key concepts III-:Rights, Justice, Freedom. 1.2.2Key concepts IV-Democracy, Authoritarianism. 1.2.3.Key concepts V:Citizenship	√							
	<u>Group B</u>- Module III:- 1.3.1. Approaches I: Normative; Legal-Institutional; Empirical-Behavioural---Systems Analysis; Structural Functionalism. 1.3.2. Approaches II: Liberalism; Social Welfarism; Neo-Liberalism. 1.3.3. Approaches III: Postcolonial; Feminist.	√							

	Module IV: 1.4.1. Marxian approach---Dialectical Materialism and Historical Materialism. 1.4.2. Key concepts: State (focus on Relative Autonomy); Class and Class Struggle-Surplus Value; Alienation. 1.4.3. Party-Democratic Centralism; Lenin-Rosa debate; Revolution-Lenin and Mao. Hegemony and Civil Society; Gramsci.								
PART I **2018** **Hons Papers** **2(Constitution and Politics in India)**	Paper -2 **<u>Group A</u>** – Module 1: 2.1.1. Evolution of the Indian Constitution. Role of the Constituent Assembly---debates (overview).The Preamble. 2.1.2. Citizenship. Fundamental Rights and Duties. Directive Principles. 2.1.3. Nature of Indian Federalism: Union-State Relations. 2.1.4. Union Executive: President, Vice-President, election, position, functions (focus on Emergency Powers).Prime Minister, Council of Minister, relationship of Prime Minister and President. Module II: 2.2.1. Union Legislature; Rajya Sabha, Lok Sabha: Organization, functions-Lawmaking procedure, Parliamentary procedure, Privileges, Committee system, Speaker. 2.2.2. Government in States: Governor, Chief Minister and Council of Ministers: position and functions-State Legislature: Composition and functions. 2.2.3. Judiciary: Supreme Court and High Courts: composition and functions Judicial activism. 2.2.4. Constitutional amendment. Major recommendations of National Commission to Review the Working of the Constitution.		√						

	<u>Group B</u> Module III- 2.3.1. Party system: features and trends-major national political parties in India: ideologies and programmes. .Coalition politics in India: nature and trends. Political Parties in West Bengal: Overview. 2.3.2. Electoral process: Election Commission; composition, functions, role. 2.3.3. Role of business groups, working class, peasants in Indian politics. Module IV: 2.4.1.Roleof (a) religion (b)language(c)caste (d)tribe and (e)regionalism in Indian politics 2.4.2. Regionalism in Indian politics. 2.4.3. New Social Movements since the 1970s: (a) environmental movements (b) women's movements (c) human rights movements.		√						

TABLE II

COURSE DURATION	**COURSE DETAIL**	**PROGRAMME OUTCOME (PO)**							
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
PART II 2019 **Hons Papers** **3(Indian Political Thought and Movement)**	Paper-3 **<u>Group A</u>**- Module I: 3.1.1. Ancient Indian Political Ideas: overview. Kautilya: Saptanga theory, Dandaniti, Diplomacy. 3.1.2. Medieval political thought in India: overview. Legitimacy of kingship. 3.1.3. Modern Indian Thought: Rammohan Roy as a pioneer of Indian Liberalism-his views on rule of law, freedom of thought and social justice. 3.1.4. Bankim Chandra, Vivekananda and Rabindranath: views on nationalism. Module II: 3.2.1. Gandhi: views on state, Swaraj, Satyagraha. 3.2.2.M.N.Roy:Radical Humanism				√				

	3.2.3Narendra Deva, Jayaprakash Narayan: Socialist ideas. 3.2.4. Syed Ahmed Khan: views on colonial rule and modernization.								
	<u>Group B</u>- Module III 3.3.1. Foundation of Indian National Congress. 3.2.2. Bengal Partition and Swadeshi movement. 3.3.3. Khilafat and Non-Cooperation Movement-Civil Disobedience Movement. August 1942 movement-INA-Naval uprising. 3.3.4.Alternatives to Congress politics(a)Subhas Chandra Bose and Forward Bloc (b)Congress Socialist Party (c)Communists. Module IV: 3.4.1. Movements against caste system and untouchability-contributions of Ambedkar,Jyotiba Phule. Pandita Ramabai's views on social justice. 3.4.2. Class and the nationalist movement under colonial rule: working class movement and peasant movement. 3.4.3. Contested notions of 'nation'---Savarkar, Jinnah.				√				
	Paper-4								
PART II 2019 **Hons Papers** **4(Comparative Government and Politics)**	**<u>Group A</u>** Module:1: 4.1.1Distinction between Comparative Government and Comparative Politics. Evolution of Comparative Politics. 4.1.2. Scope, purposes and methods of comparison. Major approaches to the study of comparative politics---Institutional approach (dominant schools: Systems approach and Structural Functional Approach) --- limitations; New Institutionalism, Political Economy---origin and key features. 4.1.3. Concept of Third World. State formation in Western Europe and Third World. Module II 4.2.1. Nature of Liberal and socialist political			√					

	systems-distinguishing features: conventions, rule of law, parliamentary sovereignty (UK), separation of powers, checks and balances, judicial review (USA), ideology, Democratic centralism (PRC), referendum, initiative (Switzerland). 4.2.2. Political Parties: features and role of party system/parties in UK, USA, PRC and Bangladesh. Interest Groups: roles and performance in UK and USA.								
	<u>Group B</u> Module III: 4.3.1. Unitary system: UK, Bangladesh. Federal system: USA, Russia. 4.3.2. Legislatures in UK and PRC: composition and functions of legislative chambers-NPC in PRC-role of second chambers in UK and USA-Committee system in UK and USA-role of speakers in parliamentary system (UK) and presidential system (USA). Module IV 4.4.1.Executive in UK, USA, France and Russia: A comparative of (i)Russian, French and American Presidency ,(ii)British and French cabinet systems. 4.4.2.Judiciary in UK ,USA, and PRC(with focus on the Procuratorate)-:A comparative study – Duties of the citizens of PRC. 4.4.3. Rights of the citizens of UK, USA and PRC-A comparative Study-Duties of the citizens of PRC.			√					

TABLE III (i)

COURSE DURATION	**COURSE DETAIL**	**PROGRAMME OUTCOME (PO)**							
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
PART III 2020	Paper-V **<u>Group A</u>**- Module 1: 5.1.1. International					√			

Hons Papers 5(International Relations and Global Politics)	Relations: outline of its evolution as academic discipline---from bi-polar politics to global politics. 5.1.2. Major representative theories: (a) Realism and Neo-Realism (b) Dependency (c) World Systems theory. 5.1.3. Emergent issues :(a) Development (b) Environment (c)Terrorism(d)Migration. Module II: 5.2.1. Making of foreign policy.5.2.2.Indian Foreign policy: major phases: 1947-1962; 1962-1991; 1991-till date. 5.2.3. Sino-Indian relations; Indo-US relations.								
	<u>Group B</u> Module III 5.3.1Cold WAR and its evolution: outline. Emergence of Third World: NAM. Pan Africanism. Post-Cold war world; overview. 5.3.2. Europe in transition: European Union, Brexit (overview). 5.3.3. Major institutions of global governance: IMF, World Bank, WTO—overview. Major regional organizations: ASEAN, OPEC, SAFTA, SAARC and BRICS.West Asia and Palestine question. Module IV:					√			

	5.4.1India and her neighbours I: Pakistan; Bangladesh. 5.4.2. India and her neighbours II: Nepal; Sri Lanka. 5.4.3. UNO: background; Major organs—General Assembly, Security Council and Secretariat (with focus Secretary General).Role of UNO in peace-keeping, human rights, and development (Millennium Development Goals and Sustainable Development Goals.								
PART III 2020 **Hons Papers 6(Political Sociology)**	Paper-6 **<u>GroupA</u>** Module I 6.1.1. Social Bases of politics. Emergence of Political Sociology-from Sociology of politics to Political Sociology. 6.1.2. Political Culture and Political Socialisation: nature, types and agencies. Political Participation: concept and types. Module II: 6.2.1. Social stratification and politics: caste, class, elite. 6.2.2. Gender and politics: basic issues. 6.2.3. Religion, Society and Politics: different perspectives.						√		
	<u>Group –B</u> Module III: 6.3.1. Classification and						√		

	types of political systems. 6.3.2. Organizations in politics: parties---typology; functions. Pressure groups. NGOS---emergence and role. 6.3.3. Military and politics: conditions and modes of intervention. Module IV: 6.4.1. Political communication: concept; structures. Media and politics (with focus on democracy). 6.4.2. Electorate and electoral behaviour (Indian context).Electoral reforms. 6.4.3. Political development and social change-role of tradition and modernity.								
	Paper-7								
PART III 2020 **Hons Papers 7(Western Political Thought and Theory)**	**<u>Group A</u>** Module 1: 7.1.1. Greek political thought: main features-Plato: justice, communism-Aristotle: state, classifications of constitutions. 7.1.2. Roman political thought: theories of Law and Citizenship-contributions of Roman thought. 7.1.3Medieval political thought in Europe: major features. 7.1.4. Contribution of Machiavelli. Significance of Renaissance. Political thought of Reformation.							√	

	Module II: 7.2.1. Bodin: Idea of Sovereignty. 7.2.2. Hobbes: founder of science of materialist politics. 7.2.3. Locke: founder of Liberalism -Views on natural rights, property and consent. 7.2.4. Rousseau: views on freedom and democracy.							√	
	<u>Group B</u> Module III; 7.3.1. Bentham: Utilitarianism. John Stuart Mill:-views on liberty and representative government. 7.3.2. Hegel: Civil Society and State. 7.3.3. Rawls on justice. 7.3.4. David Held: classification of democracy---Protective (Bentham), Developmental (J.S.Mill), Participatory. Huntington; three waves of democratization. Module IV: 7.4.1. Utopian and Scientific Socialism: basic characteristics. 7.4.2. Varieties of non-Marxist socialism: Fabianism, Syndicalism, Guild Socialism. 7.4.3. Anarchism: overview. 7.4.4. Cultural Marxism: Frankfurt School (overview).Post – Marxism; emergence and basic contentions.							√	

TABLE III (ii)

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)							
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
PART III **2020** **Hons Papers** **8(Public Administration)**	Paper-8 **<u>Group A</u>** Module I: 8.1.1. Nature, Scope and Evolution of Public Administration-Private and Public Administration. Principles of Socialist Management. 8.1.2Challenges to discipline of Public Administration and responses: New Public Administration, Comparative Public Administration, Development Administration(with focus on Indian context) 8.1.3.Major concepts of administration:(a)Hierarchy(b)Unity of Command (c)Span of Control (d)Authority (e)Centralization, Decentralization Delegation (f)Line and Staff. 8.1.4. Public Administration in the era of globalization, liberalization and privatization. Governance: conceptual emergence ---distinction with government. Module II 8.2.1. Bureaucracy: views of Marx and Weber. 8.2.2. Ecological approach to Public Administration: Riggsian Model. 8.2.3. Administrative Processes (a) Decision making (b) Communication and Control(c) Leadership (d) Coordination. 8.2.4. Policy-making: Models of policy making-policies and implementation.								√
	<u>Group B-</u> Module III:								√

	8.3.1. Continuity and change in Indian Administration: brief historical overview. 8.3.2..Civil Service in India (Bureaucracy): recruitment (role of UPSC, SPSC) training. 8.3.3Organization of Union Government: Secretariat Administration: PMO, Cabinet Secretariat. 8.3.4. Organization of State Government: Chief Secretary-relations between Secretariat and Directorate. 8.3.5. District Administration: changing role of District Magistrate. Module IV: 8.4.1. Local Self Government: Corporations, Municipalities and Panchayats in West Bengal---structure and functions.73rd and 74th Amendment: overview. 8.4.2. Planning: Planning Commission, National Development Council. District Planning .Changing nature of planning: NITI Aayog. 8.4.3. Financial Administration: Public Accounts Committee, Estimates Committee-role of CAG. 8.4.4. Citizen and administration: functions of Lokpal and Lokayukt, Right to information---Citizen Charter. 8.4.5. Citizen and Social Welfare: MGNREGA; Sarva Shiksha Abhiyan (SSA): National Rural Health Mission (NRHM).								

DEPARTMENT OF POLITICAL SCIENCE

POST GRADUATE SECTION

AFFILIATED TO THE UNIVERSITY OF CALCUTTA

- **Masters course in Political Science commenced successfully from July 2016 to August 2019 in the Department of Political Science Post Graduate Section with academic autonomy from the affiliating University, the University of Calcutta. The Syllabus was designed by the Faculty of Political Science, University of Calcutta. The time line of AQAR 2017-18 rightfully includes the Syllabus of the autonomous course.**
- **The CBCS course under the academic control of the University of Calcutta came into force from August 2018. The First Batch of PG students following the CBCS Course is awaiting Semester IV examination. Therefore it is premature to indicate the impact of projected POs & PSOs in the CBCS syllabus designed by the University of Calcutta.**

Model Reference: University of Calcutta, Syllabus for Autonomous Course

M.A. in Political Science in effect from 2016-2018-19

Programme Outcome Nos	**Programme Outcome (PO)**
PO A	• Political Theory helps students better understand the concepts that have shaped our politics, including freedom, equality, individuality, democracy and Justice. • Political Theory helps students to enhance their knowledge of key theories and concepts, historical developments, organizations and modern issues in International Relations.
PO B	• Political Sociology aims to help students gather and analyse a variety of views (on the outcome of interest/observed outcome), minimizing our bias and painting a more complete image of the social world. • The Objective is to introduce students to the basic social processes of society, social institutions and patterns of social behavior. Further to train students to understand and to interpret objectively the role of social processes, social institutions and social interactions in their lives.
PO C	• It acquaints the students with the various facets of foreign rule in India. • Helps in understanding the process of the growth of Indian national movement • Appraises about the various social movements in India, both Pre & Post-

	Independence. • It promotes knowledge on how Feminist movement has developed & influenced present-day Indian Political System. • Further this course will help the students interested in preparing for various competitive examinations, particularly for civil Services Examinations.
PO D	• To acquaint learners about political processes, theories, and Governments in India. • This course helps to prepare students for a variety of careers or graduate and professional degree programs in fields such as law, government, education, politics, policy, and business.
PO E	• This course will help Students demonstrate basic understanding of theories, concepts and practices relevant to public administration and its sub-fields. • However, the main objective of public administration is to achieve effectiveness and efficiency in an organizational. Public Administration overseas the affairs of government- government plans, strategies, formulation and implementation of policies and the execution of those policies
PO F	• This course will offer students the analytical and research skills needed to understand and explain International politics and International Relations. • To foster creative thinking about pressing global problems and to equip students with the analytical tools, language expertise, and cross-cultural understanding to guide them in that process.
POG	• Comparative politics is the study ofdomestic politics, political institutions, and conflicts between the two or more countries. It compares the political experience, institutions, behavior, and processes of the systems of government in two or more different countries. • This course will help students to study the political problems in a scientific and systematic way. To analyze the similarities and dissimilarities of different political systems and the patterns of political behavior.
POH	• This course is central to the development of political theory. As for most sciences, experimentation is the way to test theory, but for political science, comparison is the principal method. • Comparative Politics focuses on analytical empirical research. It is no longer confined to descriptive studies. It seeks to analyse empirically and analytically the actual activities of the governments and their structures and functions. It stands for scientific studies of politics.

Programme Specific Outcomes Nos	Programme Specific Outcomes (PSO)
PSO 1	• Political Theory goes beyond politics of a country's political system and helps the students to not only raise questions but also find answers in a responsibly scholarly scientific way. • To help students to comprehend the interconnection between Local, State, National and International politics. • To familiarize students with theories and issues of Political Science. • To be able to analyze what a better political world will look like and how we can create it.
PSO 2	• It promotes knowledge on basic concepts such as politics, power, gender, civil society, citizens, culture and behavior of individuals, how they developed over time and where they stand today. It also helps formulate independently generated and theoretically based research questions within political sociology. • It helps students in gaining knowledge about how political cultures are formed & shaped, the importance of political socialization process, the causes behind political participation & non- participation, the influence of political parties & the pressure groups in a political system.
PSO 3	• Modern Indian political thought is one of the fascinating areas of scholarly debates and discussions in contemporary India. It also signifies a shift away from excessive reliance upon Eurocentric views, methods and concepts to study and interpret Indian society and its politics.
PSO 4	• This course will help student understand functions of Government- Central, State and Local administration. It will help them know the Ministries of the Government- their role & responsibilities, roles & responsibilities of Members of Parliament/ State Assemblies. Further students will be made aware of the process of drafting & presenting a Bill in the Parliament, functioning and role of bureaucracy in India. • This course will familiarize the students regarding the historical background of drafting the Indian constitution. • Deeper comprehension and thorough knowledge of Indian Political Parties and politics at the Local, State and National level. • This will help develop awareness about their fundamental rights, concepts like Liberty, Equality, Democracy, Sovereignty, Globalization and environmental issues thus making them socially and politically wise and aware.

PSO 5	• This course will help Students acquire critical thinking and problem solving skills that are applied in the public service realm. • Having a degree in public administration could potentially prepare you for a career working with highway planning, rural development, or even socioeconomic research. Pursuing a career at this level is often best combined with a great education, since public service work make such a difference on society. • Graduates of a degree program in Public Administration might be found working as human health care managers or administrators, human resources managers or in executive governmental positions such as city manager.
PO6	• This course will help students develop learning and understanding core controversies, including the logic behind global challenges; Critiquing, analyzing, and synthesizing dominant views, including careful reading of key texts. • This will help students apply conceptual tools to global predicaments, realizing how policies must shift over time; • This course helps to develop ones understanding of how society and people work- something which is highly valued by employers and organizations. • Further this course will help students work collaboratively and constructively together to comprehend global problems;
PO7	• This course will help students compare what happens when different countries, for their own reasons, modify constitutions, or party systems, or whatever, provides useful information about the probable consequences of different political orders. • This course will help students tackle broader, more complicated questions such as: Are certain forms of representative democracy more effective than others? Why are some countries extremely prosperous, and others extremely poor? How does authoritarian control drive economic development? Does culture impact quality of governance?
PO8	• After completing this course, students will have the methodological background to understand and explain variations in political behavior and political institutions. Students will also have a general understanding of the issues facing political systems in each of the regions covered.

Mapping of PSOs and POs of the University of Calcutta, Syllabus for Autonomous Course

M.A. in Political Science in effect from 2009-2018-19

PSO	PO							
	A	B	C	D	E	F	G	H
1	√	√	√	√	√	√		
2	√	√	√	√				
3	√	√	√	√				
4	√	√	√	√	√			
5	√	√			√	√		

TABLE I

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)							
		A	B	C	D	E	F	G	H
SEMESTER I 2018 (Feb) Paper 1 Course 101	1. Classical Liberalism 2. Major Contemporary Liberalism Communitarian 3. Critique of Liberalism	√ √ √							
Political Theory Paper 1 Course 102	Group B 1. Empirical Theory- Karl Popper and the falsifiability Principal 2. David Hume's Problem with Empiricism- Historical evolution	√ √							

	3. Max Weber's Theory of concept formation 4. Anti-Positivist Response-Problem of measuring Progress in theory expressive theories and problem solving theories.	√ √							
Political Theory Paper 1 Course 103	1. Kant and European Enlightenment 2. Hegel: Theories of recognition, Civil Society and state 3. The Critique of Enlightenment Nietzsche's Theory of Will to Power	√ √ √							
Political Theory Paper 1 Course 104	1. Base-Superstructure metaphors and the political instance 'immediate correspondence' perspective- the relative autonomy of the	√							

	political 2. Theories of civil society: Marx and Gramsci 3. Theories of state-Gramsci's and Althusser 3. Eurocommunism 4. Ideology: Marx and Gramsci 5. Marx and Ecology	√ √ √ √							

COURSE DURATION	**COURSE DETAIL**	**PROGRAMME OUTCOME (PO)**							
		A	**B**	**C**	**D**	**E**	**F**		
Part1 2018 Political Sociology Paper II Course 201	1. State and civil society relationships 2. Theories of Post industrialism. 3. Modernization and Political Development. 4. Power and subjectivity.		√ √ √ √ √						

Part1 2018 Political Sociology Paper II Course 202	1. Feminism and its different schools. 2. Post Modernist Critique of Modernity 3. Key Modernist thinkers 4. Post Colonialism		√ √ √						
Political Sociology Paper II Course 203	1. Political Leadership 2. Elite theories 3. Problems of Industrial and Post Industrial societies.		√						
Political Sociology Paper II Course 204	1. Modernization Enterprise 2. Political Communication 3. Technology and Techno centricity 3. Mediated Politics		√ √ √						
Modern	1.			√					

Indian Political Thought and Movement Paper III Course 301	Nationalism and Modernity 2. Early nationalist ideas 3. Nationalism and culture 4. Nationalism and religion 5. Caste, social reform and nationalism			√ √ √					
Modern Indian Political Thought and Movement Paper III Course 302	1.Swadeshi movement 2.Peasant movements in colonial India 3.Labour Movements in colonial India 4.Women and nationalism 5.Adivasi movement			√ √ √ √					
Modern Indian Political Thought and Movement Paper III Course 303	1. Gandhi's humanism and politics 2. Gandhi's critique of modernity 3. Satyagraha 4. Gandhi and the subaltern caste and classes. 5.			√ √ √ √ √					

	Sarvodaya society								
Modern Indian Political Thought and Movement Paper III Course 304	1. Aurobindo Ghosh 2. Jawaharlal Nehru 3. M.N Roy 3. Ram Manohar Lohia 4. Islam and Nationalism			√ √ √ √					
PART I 2018 Paper IV Politics in India Course 401	1. Approaches to the study of Indian Politics 2. Democracy in India 3. Parties and Party System in India 4. Federal Politics in India 5. Elections and Electoral Politics in India.				√ √ √ √ √				

Paper IV Politics in India Course 402	1. Theories of Indian State 2. Industrial Strategies in India 3.Policies and Politics in agrarian sector 4. Development in the Social Sector: Health, Education and Environment.				√ √ √ √				

COURSE DURATION	**COURSE DETAIL**	**PROGRAMME OUTCOME (PO)**							
		A	**B**	**C**	**D**	**E**	**F**		
Paper IV Politics in India Course 403	1. Perspective on the sociology of Indian Politics. 2. Communities and Community based politics in India. 3. Role of labour in Indian Politics. 4. New social movements in India.				√ √ √ √				

Paper IV Politics in India Course 404	1. Regionalism in India. 2. Regional Institutions. 3. The left front government in West Bengal. 4. Local Self Government in West Bengal.				√ √ √				
Part II 2019 Paper V Public Administration Course 501	1. Rise of Public Administration as a Discipline. 2. Early theories of Public Administration. 3. New Public Administration 4. Neo-liberal theories. 5. Critical theory of public organization. 6. Marx and Lenin on Bureaucracy					√ √ √ √ √ √			

Part II 2019 Paper V Public Administration Course 502	1. Modern Organization in/as society 2. Dominant Paradigms-Neo-classical, systems, later human relations, market, interpretive-critical 3. Creative factors-Motivation, leadership, communication 4. Postmodernism turn-organizational diversity, contradiction, ambiguity and paradox- critique.					√ √ √ √			
Part II 2019 Paper V Public Administration Course 503	1. Public Administration: Reform and accountability.					√			
Part II 2019 Paper V Public Administration	1. Genesis of Development Administration 2. Bureaucracy and					√ √			

Course 504	Development Administration. 3. People's participation in development process 4. State, market and the role of civil society 5. Crisis in the theory of Development Administration 6. New concepts of Development.					√ √ √ √			
Part II 2019 Paper VI International Relations Course 601.	1. Inter paradigm debates in International Relations. 2. Realism 3. Pluralism 4. New Approaches-Critical Theory, Post structuralism, Neo-liberalism, Feminism, Green Politics.						√ √ √ √		

Part II Paper VI International Relations Course 602	1. Development and underdevelopment 2. Globalization, Multinational corp in third world 3. Politics of global trade 4. Development in social sector: Tension areas.						√ √ √ √		
Part II Paper VI International Relations Course 603	1. Emerging patterns and trends in contemporary international politics 2. Dynamics of power-politics 3. Regionalism theoretical perspective 4. Cultural conflicts in international politics. 5. International security 1. An overview of contending approaches to Indian Foreign Policy. 2. Ends and means						√ √ √ √ √ √ √		

	of Indian Foreign Policy						√		
	3. India and the great powers.								
Part II Paper VI International Relations Course 604	4. India and the developing countries with special reference to neigbours.						√		
	1. Comparative politics in the post cold war.							√	
	2. South Asia as a region							√	
	3. Political regimes and processes in the states of South Asia.							√	
Part II Paper VII Comparative Politics: South Asia Course 701	1. Colonial past in Sub-Saharan Africa							√	
	2. Civil society and political cultures in Africa							√	
	3. States and regimes in African countries.							√	
PART II Paper Contemporary Politics: Africa Course 702	4. Role of ethnicity in African politics.							√	
	5. Question of human rights in							√	

	Africa							√	
	1. Governmental system in-nature of politics: an overview.							√	
	2. Politics and federalism							√	
	3. Parties and pressure groups in European politics.							√	
PART II Paper 7 Contemporary Politics: Europe Course 703	4. Environmental movements and politics in Europe.							√	
	5. Politics across border: European Union.							√	
	6. Resurgence in ethnicity in Europe								
	1. Politics of Post Socialist order: Russia							√	
	2. Parties and politics in contemporary Russia							√	
	3. Post- Mao China- Trends and Development							√	
PART II Paper 7 Contemporary Politics:	4. The Chinese communist party							√	

Russia, China and Vietnam Course 704	in transition 5. Politics of economic reforms: Vietnam							√	
PART II Paper 8 Contemporary Politics: North America Course 801	1. Religious pluralism and multiculturalism in America 2. Growth of political stability in America 3. Public life in America 4. Emerging public philosophies in America								√ √ √ √
PART II Paper 7 Contemporary Politics: Latin America Course 802	1. Political history of Latin America 2. Peasant movement- select cases 3. State and labour in post war Latin America 4. Liberation theology and politics 5. The left in Latin America 6. Global capital and regional								√ √ √ √ √ √

PART II Paper 7 Contemporary Politics: Dissertation Course 803 and 804	experiments in Latin America since 1980s.								

Department of Sociology

UNDERGRADUATE SECTION

Model Reference: University of Calcutta, Syllabus for Sociology (Honours) (NON-CBCS)

Programme Outcome Nos	**Programme Outcome (PO)**
PO A	• Students will be able to think Sociologically about the relationship between social structure, interaction, identities and inequalities. Reference: Paper I
PO B	• Students will be able to comprehend the emergence of Sociology as a discipline in the West along with the contributions of classical European theorists. Reference : Paper II
PO C	• Students will be able to explain and identify each major sociological theories and apply them to everyday life. • Students will get acquainted to the methods of data collection and data (statistical) analysis as well as become proficient in quantitative and qualitative research design. Reference : Paper III & IV
PO D	• Students will be able to understand the development of Sociology in India along with the major contributions of some of the founding fathers of Indian Sociology. Reference: Paper V
PO E	• Students will learn about the working and underlying theories of the Social Institutions in general. • Students will be introduced to ideas specifically about the Indian Social Structure and the Processes that are instrumental in bringing change in Society (Indian Context). Reference: Paper VI and VII
PO F	• Students will be able to identify and describe current social issues and social problems particularly in the context of Indian Society. • Students are Introduced to the field to develop the skill set ranging from identifying a problem to conducting research (by collecting primary data and analyzing the data using proper statistical tools) on pertinent social issues. Reference: Paper VIII

Programme Specific Outcomes Nos	Programme Specific Outcomes (PSO)
PSO 1	• Understand the basic concepts in Sociology and develop an understanding about macro and micro perspectives in Sociology. • Students will be able to understand the underlying principles that differentiate Sociology from other Social Sciences. • Understand the social reality beyond the common sense knowledge and explore the philosophy underlying Sociological Imagination.
PSO 2	• Gain an understanding regarding the historicity of the emergence of Sociology as a discipline both in the West and in India. • Understand the various Sociological Perspectives and its associated paradigm shifts. • Understand the conflictual as well as complimentary dimensions of approaches to understand Indian Society (Indological and Ethnographical Approach)
PSO 3	• Develop an understanding of various aspects of social science research with focus on methodology. • Gain knowledge about the various statistical tools for data analysis. • Hands on training on writing research proposal, doing fieldwork and report writing.
PSO 4	• Comprehend the various features of Indian Society and culture including unity in diversity: Indian Social Structure and processes of change. • Understanding rural/urban and tribal society (specifically problems of the tribal community in India). • Understand various dimensions of gender inequality in India and comprehend the interface between the dimensions of social stratification namely, gender, caste and class. • Identify the factors by which gender inequality is reproduced within the family and society at large. • Understand the meaning of social problem with its various theoretical underpinnings. • Understand and identify the various issues associated with the aspects of demography, poverty, illiteracy, alienation of youth, violence against women, old age dimensions in India.

Mapping of PO & PSO for Sociology Honours Syllabus of CU.

PSO	PO					
	A	B	C	D	E	F
1	√	√	√		√	√
2	√	√	√	√	√	
3			√			√
4				√	√	√

Programme Outcome for Partial Semester wise Courses in Sociology Honours under University of Calcutta

TABLE I

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)					
		A	B	C	D	E	F
PART I 2018 **HONS PAPER I** INTRODUCTORY SOCIOLOGY	GROUP A BASIC CONCEPTS	√					
	GROUP B BASIC SOCIAL PROCESSES	√					
HONS PAPER II WESTERN SOCIOLOGICAL THOUGHT	GROUP A EMERGENCE OF SOCIOLOGY AS A DISCIPLINE & CONTRIBUTION OF PREDECESSORS AND FOUNDING FATHER OF SOCIOLOGY		√				
	GROUP B CONTRIBUTION OF MAJOR EUROPEAN CLASSICAL THINKERS		√	√			
PART II 2018 **HONS PAPER III** SOCIOLOGICAL THEORY	GROUP A CLASSICAL THEORY	√	√				
	GROUP B CONTEMPORARY THEORY	√		√			
HONS PAPER IV RESEARCH METHODS & SOCIAL STATISTICS	GROUP A METHODOLOGY			√			√
	GROUP B SOCIAL STATISTICS			√			√

TABLE II

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)					
		A	**B**	**C**	**D**	**E**	**F**
PART III 2018 **HONS PAPER V** INDIAN SOCIOLOGY	GROUP A & B DEVELOPMENT OF SOCIOLOGY IN INDIA AND CONTRIBUTION OF INDIAN SOCIAL THINKERS			√	√		
HONS PAPER VI SOCIAL INSTITUTIONS	GROUP A & B	√		√			
HONS PAPER VII INDIAN SOCIAL STRUCTURE AND PROCESS							
	GROUP A & B	√		√	√	√	
HONS PAPER VIII CONTEMPORARY INDIAN SOCIAL PROBLEMS & DISSERTATION	GROUP A SOCIAL PROBLEMS IN INDIA	√		√		√	√
	GROUP B DISSERTATION (FIELD WORK)						√

Department of Physics

UNDERGRADUATE SECTION

Model Reference: University of Calcutta, Syllabus for Physics (Honours) (NON-CBCS)

Programme Outcomes Nos	Programme Outcomes (PO)
PO A	**To prepare the students for a successful career in industry as well as to motivate them for higher education and to take research as a career**
PO B	**To provide strong foundation in basic sciences and mathematics**
PO C	**To identify, formulate and analyze complex scientific problems reaching substantiated conclusions**
PO D	**To develop individual and team work by functioning effectively as an individual or as a member in a group in laboratory classes**
PO E	**Ability to use modern tecchniques, sophisticated instruments, current application softwares and to handle different types of electrical and electronic circuits**
PO F	**To develop computational acumen in solving different analytical problems of Physics**
PO G	**To develop communicating ability such as being able to comprehend and write effective laboratory notebooks and design documentation, prepare effective presentations, and give and receive clear instructions**
PO H	**To develop an opportunity to work in interdisciplinary groups**
PO I	**To develop the ability to engage in independent and life-long learning in the current context of technological change**
PO J	**To inculcate scientific temperament in the young minds and outside the scientific community**

Programme Specific Outcomes Nos	Programme Specific Outcomes (PSO)
PSO 1	**Apply knowledge in emerging and varied areas of Physics for higher studies, research and industries related to software and hardware applications**
PSO 2	**Develop leadership and managerial skills and understanding the need for lifelong learning to be a competent professional**
PSO 3	**To equip with front level communication technologies (ICT) for innovating ideas and solutions to existing/novel challenges**
PSO 4	**To be acquainted with good laboratory practices and safety measures**

Mapping of PO & PSO for Physics Honours Syllabus of University of Calcutta

Programme Specific Outcomes (PSO) Nos	Programme Outcomes (PO)									
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
PSO 1	√	√	√		√	√	√	√	√	
PSO 2	√			√	√		√	√	√	
PSO 3	√	√	√	√	√			√	√	√
PSO 4		√		√	√		√			

Programme Outcome mapping for Partial Semester wise Courses in Physics Honours under University of Calcutta

TABLE I

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)									
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
Part I	Unit-01: Mathematical Methods I & Mathematical Methods II	√	√	√			√			√	√
	Unit-02: Waves and Optics I & Electronics I	√	√	√		√				√	√
Papers I & II	Unit-03: Classical Mech.I & Thermal Physics I	√	√	√		√			√		√
	Unit-04: Laboratory	√	√		√	√		√		√	√

TABLE II

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)									
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
Part II	Unit-05: Electronics II & Electricity and Magnetism	√	√	√		√			√	√	√
	Unit-06: Electrostatics & Waves and Optics II	√	√	√					√	√	√
	Unit-07: Quantum Mech.I & Thermal Physics II	√	√	√			√		√	√	√
Papers III & IV	Unit-08: Laboratory	√	√		√	√		√		√	√

TABLE III

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)									
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
Part III	Unit-09: Classical Mechanics II & Special Theory of Relativity	√	√	√					√	√	√
	Unit-10: Quantum Mech.II & Atomic Physics	√	√	√			√		√	√	√
	Unit- 11: Nuclear and Particle Physics I & Nuclear and Particle Physics II	√	√	√					√	√	√
Papers V, VI, VII & VIII	Unit- 12: Solid State Physics I & Solid State Physics II	√	√	√					√	√	√
	Unit- 13: Statistical Mechanics & Electromagnetic Theory	√	√	√			√		√		√
	Unit- 14: Laboratory	√			√	√		√	√	√	
	Unit- 15: Laboratory	√			√	√		√	√	√	
	Unit- 16: Computer laboratory	√		√	√	√	√	√	√	√	√

DEPARTMENT OF PHYSICS

POST GRADUATE SECTION

AFFILIATED TO THE UNIVERSITY OF CALCUTTA

- **The Course entitled M.Sc in Physics was conducted successfully from August 2007 to July 2018 in the Post Graduate Department of Physics with full academic autonomy granted by the affiliating University, ie. the University of Calcutta. The Syllabus was designed by the Faculty of Physics under guidance of the Expert Committee appointed for that purpose. The time line of AQAR 2017-18 rightfully includes the Syllabus of the autonomous course.**
- **The CBCS course under the academic control of the University of Calcutta came into effect from August 2018. The First Batch of PG students following the CBCS Course is awaiting Semester IV examination. Therefore, it is premature to indicate the impact of the projected POs & PSOs in the CBCS syllabus designed by the University of Calcutta.**

Model Reference: University of Calcutta, Syllabus for Autonomous Course

M.Sc. in Physics at Lady Brabourne College in effect from 2007-08 to 2018-19

Programme Outcomes Nos	Programme Outcomes (PO)
PO A	To prepare the students for a successful career in industry as well as to motivate them for higher education and to take research as a career
PO B	To provide strong foundation in basic sciences and mathematics
PO C	To identify, formulate and analyze complex scientific problems reaching substantiated conclusions
PO D	To develop individual and team work by functioning effectively as an individual or as a member in a group in laboratory classes
PO E	Ability to use modern tecchniques, sophisticated instruments, current application softwares and to handle different types of electrical and electronic circuits
PO F	To develop computational acumen in solving different analytical problems of Physics
PO G	To develop communicating ability such as being able to comprehend and write effective laboratory notebooks and design documentation, prepare effective presentations, and give and receive clear instructions
PO H	To develop an opportunity to work in interdisciplinary groups
PO I	To develop the ability to engage in independent and life-long learning in the current context of technological change
PO J	To inculcate scientific temperament in the young minds and outside the scientific community
PO K	Gain in depth knowledge in the areas of Condensed Matter Physics and Material science to fulfill the needs of industries using cross-cutting technologies

Programme Specific Outcomes Nos	Programme Specific Outcomes (PSO)
PSO 1	To apply knowledge in emerging and varied areas of Physics for higher studies, research and industries related to software and hardware applications
PSO 2	To develop leadership and managerial skills and understanding the need for lifelong learning to be a competent professional
PSO 3	To equip with front level communication technologies (ICT) for innovating ideas and solutions to existing/novel challenges
PSO 4	To be acquainted with good laboratory practices and safety measures
PSO 5	To develop research oriented skills by implementing project work in the final semester course

Mapping of PO & PSO

Programme Specific Outcomes (PSO) Nos	Programme Outcomes (PO)										
	A	B	C	D	E	F	G	H	I	J	K
PSO 1	√	√	√		√	√	√				√
PSO 2	√			√			√		√	√	√
PSO 3	√				√	√		√			
PSO 4	√			√	√			√			√
PSO 5	√	√	√		√	√	√	√	√		√

Programme Outcome mapping for Semester wise Courses in PG Physics under University of Calcutta

TABLE I

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)										
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Part I	PHY 101T Mathematical Methods	√	√	√			√			√	√	√
	PHY 102T Classical and Relativistic Mechanics	√	√	√						√		√
	PHY 103T Quantum Mechanics I	√	√	√					√		√	√
Semester I 6 Months	PHY 104T Electronics	√	√		√	√		√		√		
	PHY 105P General Practical I				√	√		√				√
Part I	PHY 106T Classical Electrodynamics	√	√	√			√			√	√	
	PHY 107T Statistical Mechanics	√	√	√			√		√	√	√	√
	PHY 108T Quantum Mechanics II	√	√	√			√			√	√	
Semester II 6 Months	PHY 109P General Practical II	√			√	√		√				√
	PHY 110P Computer Practical	√	√		√	√	√	√	√			

TABLE II

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)										
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Part II **Semester III** **6 Months**	PHY 201T Atomic, Molecular & Laser Physics	√	√	√		√			√	√	√	
	PHY 202T Nuclear and Particle Physics	√	√	√					√		√	
	PHY 203T Condensed Matter Physics	√	√	√			√		√	√	√	√
	PHY 204P General Practical III	√	√		√	√		√				
	PHY 205P Microprocessor Practical	√	√		√	√		√				
Part II **Semester IV** **6 Months**	PHY 206T Advanced Paper I	√	√	√					√	√		√
	PHY 207T Advanced Paper II	√	√	√					√	√		√
	PHY 208T Elective Paper	√	√	√					√	√	√	√
	PHY 209P Advanced Experiments	√	√		√	√		√				√
	PHY 210 PROJECT	√	√	√	√	√	√	√	√	√	√	√

Department of Chemistry

Model Reference: University of Calcutta, Syllabus for Honours (Honours)

(NON-CBCS)

Programme Outcome Nos	Programme Outcomes (PO)
PO A	To prepare the students for a successful career in industry, to motivate them for higher education and to take up research as a career
PO B	To provide strong foundation in basic sciences and mathematics
PO C	To identify, formulate and analyze complex scientific problems
PO D	To develop individual and team work by functioning effectively as an individual or as a member in a group in laboratory classes
PO E	Introduction to advanced instrumentation using modern experimental techniques, ability to independently execute experiments in specially designed chemical glassware as well as handling sophisticated digital instruments
PO F	To develop communication skills such as being able to comprehend and write well-documented laboratory notebooks in a structured, focused and meticulous manner, prepare effective presentations, and give and receive clear instructions
PO G	To develop an opportunity to work in interdisciplinary groups
PO H	To inculcate scientific temperament in young minds and outside the scientific community

Programme Specific Outcomes Nos	Programme Specific Outcomes (PSO)
PSO 1	Apply knowledge in emerging and varied areas of Chemistry for higher studies, research and industry and to be acquainted with state-of the art techniques & technologies
PSO 2	To develop leadership and managerial skills promoting the need for lifelong learning as required for a competent professional
PSO 3	To develop a neat experimental hand in conformity with good laboratory practices including safety measures

Mapping of PO & PSO for Chemistry Hons Syllabus of University of Calcutta

Programme Specific Outcomes (PSO) Nos	PROGRAM OUTCOMES (PO)							
	A	B	C	D	E	F	G	H
PSO 1	√	√	√	√	√	√	√	√
PSO 2		√	√	√		√	√	
PSO 3	√	√		√	√	√	√	√

Programme Outcome mapping for Partial Semester wise Courses in Chemistry Honours under University of Calcutta

	COURSE DURATION	COURSE DETAIL	PROGRAM OUTCOMES (PO)							
Paper	Part-1 One year		A	B	C	D	E	F	G	H
Paper II A	CHT 11a	Unit-01: Radioactivity & Atomic structure		√	√		√		√	
		Unit-02: Chemical Periodicity		√						√
	CHT 11 b	Unit-01: Chemical Bonding & structure		√	√				√	
		Unit-02: Acid-Base Reactions			√					
Paper I A	CHT 12a	Unit-1 : Acyclic Stereochemistry		√						√
		Unit II: Bonding and physical Properties		√	√					
	CHT 12b	Unit-1 : General Treatment of reaction Mechanism	√		√	√				√
		Unit II: Nucleophilic Substitution Reactions			√					√
Paper I B	CHT 13 a	Unit 1: Kinetic Theory and gaseous state		√	√				√	√
		Unit II : Themodynamics-1		√	√				√	√
	CHT 13 b	Unit 1: Thermodynamics-II		√	√				√	
		Unit II: Chemical Kinetics		√	√		√		√	
Paper II B	CHP 14a+14b	Qualitative Inorganic Analysis				√		√	√	√

TABLE II

	COURSE DURATION	COURSE DETAIL	PROGRAM OUTCOMES (PO)							
Paper	**Part-1I One year**		**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**
Paper IV A	**CHT 21a**	Unit-01: Chemical Periodicity II			√					√
		Unit-02: Other Types of Bonding		√	√					√
	CHT 21 b	Unit-01: Chemistry of s and p block elements			√					
		Unit-02: Precipitation & Redox Reactions			√		√			√
Paper III A	**CHT 22a**	Unit-1 : Addition Reactions			√		√			√
		Unit II: Elimination & Aromatic substitution			√		√			√
	CHT 22b	Unit-1 : Nitrogen Compounds & Organometallics	√		√				√	√
		Unit II: Reactions: rearrangements			√					
Paper III B	**CHT 23 a**	Unit 1: Thermodynamics & Equilibrium		√	√	√			√	√
		Unit II : Thermodynamics-1		√	√	√			√	√
	CHT 23 b	Unit 1: Quantum Chemistry-1	√	√	√				√	√
		Unit II: Electrochemistry		√	√		√			√
Paper IV B	**CHP 24a**	Analytical Estimations				√	√	√		√
	CHP 24b	Instrumental Estimations	√			√	√	√	√	√

TABLE III

Paper	COURSE DURATION	COURSE DETAIL	PROGRAM OUTCOMES (PO)							
	Part-1II One year		A	B	C	D	E	F	G	H
Paper V	CHT 31a	Unit-1: Chemistry of Coordination Compounds			√					√
		Unit-II: Chemistry of d and f block elements		√						
	CHT 31 b	Unit-1: Organometallic Compounds	√		√					
		Unit-II: Bioinorganic Chemistry	√			√			√	√
	CHT 31 c	Unit-1: Electrochemical, spectral analysis, analytical separation					√			
		Unit-II: Statistical Methods in chemical analysis & environmental analysis		√	√					√
	CHT 31 d	Unit-1: Gravimetric & Titrimetric methods of analysis					√			
		Unit-II: Thermodynamics of dissolution		√	√					√
Paper VI A	CHT 32a	Unit-1 : Carbanion Chemistry & cyclic stereochemistry			√					
		Unit II: Spectroscopy-UV, IR, NMR	√	√	√				√	√
	CHT 32b	Unit-1 : Synthetic strategies & Asymmetric Synthesis	√	√	√		√			√
		Unit II: Carbohydrate chemistry			√					√
	CHT 32 c	Unit 1: Carbocycles & Heterocycles			√					
		Unit II : Amino acids, peptides & nucleic acids	√		√				√	√
Paper VII A	CHT 33 a	Unit 1: Properties of solids, interfaces & dielectrics		√	√		√		√	
		Unit II: Quantum Chemistry-II	√	√	√				√	√
	CHT 33b	Unit-I: Phase equilibrium & colligative properties		√	√		√			√
		Unit-II: Statistical thermodynamics & third law	√	√	√				√	√
	CHT 33c	Unit 1; Kinetics & photochemistry	√	√			√			√
		Unit II: Spectroscopy	√	√	√				√	
Papers VIB+VII B + VIIIA + VIII B	CHP 34a+34b	Organic spectroscopic and qualitative analysis			√		√			
	CHP 35 a+35b	Advance physico-chemical experiments	√	√	√		√	√	√	√

PROGRAMME OUTCOME OVERVIEW
Of
M.Sc IN CHEMISTRY
LADY BRABOURNE COLLEGE, KOLKATA
affiliated to
THE UNIVERSITY OF CALCUTTA

The Course entitled M.Sc in Chemistry was successfully launched from 31st August 2016 onwards in the Post Graduate Department of Chemistry with full academic autonomy granted by the affiliating University, ie. the University of Calcutta. The Department of Chemistry thus started functioning as a full-fledged postgraduate department from 31st August, 2016 under the University of Calcutta.

The syllabus followed for the postgraduate academic sessions 2016-18 and 2017-19 in entirety was the then pre-CBCS postgraduate syllabus in Chemistry of the University of Calcutta , i.e the syllabus of Two-Year Four-Semester M.Sc Course in Chemistry as stipulated by the University of Calcutta.

The CBCS course under the academic control of the University of Calcutta came into effect from August 2018. The First Batch of PG students following the CBCS Course is awaiting Semester IV examination. Therefore, it will not be appropriate to indicate the impact of the projected POs & PSOs in the CBCS syllabus designed by the University of Calcutta before the exit of the first PG batch following the aforesaid CBCS curriculum.

Programme Outcome Nos	Programme Outcomes (PO)
PO A	To prepare the students for a successful career in industry, to motivate them for higher education and to take up research as a career
PO B	To provide strong foundation in basic sciences and mathematics
PO C	To identify, formulate and analyze complex scientific problems
PO D	To develop individual and team work by functioning effectively as an individual or as a member in a group in laboratory classes
PO E	Introduction to advanced instrumentation using modern experimental techniques, ability to independently execute experiments in specially designed chemical glassware as well as handling sophisticated digital instruments
PO F	To develop communication skills such as being able to comprehend and write well-documented laboratory notebooks in a structured, focused and meticulous manner, prepare effective presentations, and give and receive clear instructions
PO G	To develop an opportunity to work in interdisciplinary groups
PO H	To inculcate scientific temperament in young minds

Programme Specific Outcomes Nos	Programme Specific Outcomes (PSO)
PSO 1	**Apply knowledge in emerging and varied areas of Chemistry for higher studies, research and industry and to be acquainted with state-of the art techniques & technologies**
PSO 2	**To develop leadership and managerial skills promoting the need for lifelong learning as required for a competent professional**
PSO 3	**To develop a neat experimental hand in conformity with good laboratory practices including computer-based practicals in conformity with safety measures followed in the lab**
PSO 4	**To develop research oriented skills by implementing project work in the final semester course**

Mapping of PO & PSO of M.Sc Chemistry, Lady Brabourne College, syllabus followed being the Two-Year Four-Semester M.Sc Course in Chemistry as stipulated by the University of Calcutta

M.Sc. in Chemistry at Lady Brabourne College in effect since 31st August, 2016

Programme Specific Outcomes (PSO) Nos	PROGRAMME OUTCOME (PO)							
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
PSO 1	√		√	√	√	√	√	√
PSO 2			√	√		√	√	
PSO 3				√	√	√	√	√
PSO 4	√	√			√	√		√

Programme Outcome mapping for Semester wise Courses in PG Chemistry under University of Calcutta

TABLE I

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)							
	Paper	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**
Semester- I **6 Months**	**Course ID: CHEM-G11**								
	Unit-1: Symmetry		√	√					
	Unit-2: Coordination Chemistry 1			√					√
	Unit-3: Bioinorganic chemistry 1	√						√	
	Unit-4: Solid state chemistry 1	√	√						
	Unit-5: Electrochemical analysis		√	√		√			
	Course ID: CHEM-G12								
	Unit-1: Structure-Activity Relationship			√					
	Unit-2: Stereochemistry 1			√					√
	Unit-3: Pericyclic Reactions			√					
	Unit-4: NMR Spectroscopy 1	√	√			√			√
	Unit-5: Natural Products 1-Terpenoids	√	√				√	√	
	Course ID: CHEM-G13								
	Unit-1: Thermodynamics	√	√	√					
	Unit-2: Atomic Structure	√	√	√					
	Unit-3: Quantum Mechanics 1	√	√	√				√	
	Unit-4: Kinetics 1		√	√		√	√	√	
	Unit-5: Absorption Spectroscopy	√			√	√			
	Course ID: CHEM-G14 Practical Chemistry 1: Spectrophotometric, ion exchange & complexometric estimations, identification of single organic liquid with one or group. Numerical, kinetic and equilibrium experiments				√	√	√	√	√

	Paper								
	Course ID: CHEM-G21	**PROGRAMME OUTCOME (PO)**							
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
	Unit-1: Chemical Bonding				√	√			
	Unit-2: Coordination Chemistry 2		√		√	√	√		√
	Unit-3: Organometallics 1	√						√	√
	Unit 4: Chemistry of the Elements 1	√	√						
Semester- II	Unit 5: Statistical Error &	√	√			√			
6 Months	Radiochemical Analyses								
	Course ID: CHEM-G22								
	Unit-1: Photochemistry			√					
	Unit- 2: Synthetic Methodology 1	√		√					√
	Unit-3: Heterocyclic Chemistry 1							√	
	Unit-4: Synthetic Methodology 2	√		√					√
	Unit-5: Natural Products 2-Alkaloids	√						√	√
	Course ID: CHEM-G 23								
	Unit-1: Quantum Mechanics 2	√	√	√					√
	Unit-2: The H-atom Problem		√	√					
	Unit-3: Kinetics 2	√	√			√			√
	Unit-4: Statistical Thermodynamics	√	√	√				√	√
	Unit-5: Interfacial Chemistry	√	√			√		√	
	Course ID: CHEM-G 24 **Practical Chemistry 2**				√	√	√	√	√
		PROGRAMME OUTCOME (PO)							
	Paper	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**
	Course ID: CHEM-G 31								
	Unit-1: EPR and Mossbauer Spectra			√		√			
	Unit-2: PES and diffraction methods	√				√		√	
	Unit-3: Mass Spectroscopy			√					
	Unit-4: Emission Spectroscopy		√	√		√			√
	Unit-5: FT Spectroscopy	√	√	√		√			√
	Course ID: CHEM-SI 32								

Semester- III **6 Months**	Unit-1: Group Theory 1			√				√	
	Unit-2: Solid State Chemistry 2	√	√	√					
	Unit-3: Organometallics 2	√						√	√
	Unit-4: Bioinorganic Chemistry 2	√						√	
	Unit-5: Inorganic Rings, Cages & Clusters								
	Course ID: CHEM-SO 32								
	Unit-1: Stereochemistry 2	√		√					√
	Unit-2: NMR Spectroscopy 2	√	√		√	√		√	√
	Unit- 3: Asymmetric Synthesis 1								
	Unit-4: Heterocyclic Chemistry 2			√					
	Unit-5: Medicinal Chemistry 1	√		√	√			√	
	Course ID: CHEM-SP 32								
	Unit-1: Angular Momentum	√	√	√					√
	Unit-2: Group Theory 1		√	√				√	
	Unit-3: Valency		√						√
	Unit 4: Mathematical Concepts	√	√	√					√
	Unit-5: Kinetics 3	√	√	√		√			√
	Course ID: CHEM-SI 33								
	Unit-1: Crystallography 1	√	√		√		√		
	Unit 2: Magnetochemistry 1	√	√					√	
	Unit-3: Inorganic Reaction Mechanism			√					
	Unit-4: Complex Equilibria 1		√	√					√
	Unit-5: Chemistry of the Elements 2		√						√
	Paper	**PROGRAMME OUTCOME (PO)**							
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
	Course ID: CHEM-SP 33								
	Unit-1: Biophysical Chemistry	√		√				√	√
	Unit-2: Electrochemistry	√	√					√	
	Unit-3: Polymer Chemistry	√		√		√		√	
	Unit-4: Vibration-rotation Spectra	√	√	√	√	√			
	Unit-5: NMR Spectroscopy 2	√	√			√		√	√
	Course ID: CHEM-SO 33								
	Unit-1: Applications of MO Theory			√					√
	Unit-2: Homo or hetero bond activation and funtionalisation			√					√
	Unit-3: Synthetic Methodology 3	√		√					
	Unit-4: Medicinal Chemistry 2	√						√	

	Unit-5: Natural Products 3	√						√	
	Course ID: CHEM-SI 34 Practical Inorganic Chemistry				√	√	√	√	√
	Course ID: CHEM-SO 34 Practical Organic Chemistry				√	√	√	√	√
	Course ID: CHEM-SP 34 Practical Physical Chemistry				√	√	√	√	√
Semester- IV **6 Months**	**Course ID: CHEM-SI 41**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**
	Unit-1: Group Theory 2		√	√					
	Unit-2: Crystallography 2	√	√	√		√		√	√
	Unit-3: Bioinorganic chemistry 3	√						√	√
	Unit 4: Chemistry of Elements 3			√					
	Unit-5: Nuclear Chemistry	√	√			√			
	Course ID: CHEM-SO 41								
	Unit-1: Stereochemistry 3								√
	Unit 2: Asymmetric synthesis 2		√	√		√			√
	Unit 3: Heterocyclic Chemistry 3	√		√					
	Unit-4: Organometallic Chemistry of Transition Elements	√						√	
	Unit-5: Supramolecular Chemistry		√			√			
	Course ID: CHEM-SP 41								
	Unit-1: Quantum Mechanics 3	√	√	√				√	√
	Unit-2: Perturbation Theory	√	√	√				√	√
	Unit-3: Time-dependent Quantum Processes	√	√	√				√	√
	Unit-4: Quantum Chemistry 1	√	√	√				√	√
	Unit-5: Quantum Chemistry 2	√	√	√				√	√
	Course ID: CHEM-SI 42								
	Unit-1: Spectroscopy 1	√	√					√	√
	Unit 2: Inorganic Photochemistry			√					√
	Unit- 3: Complex Equilibria 2								
	Unit-4: Magnetochemistry 2		√			√		√	√
	Unit-5: Chemistry of the Elements 4			√					
	Course ID: CHEM-SP 42								
	Unit-1: Statistical Mechanics 1	√	√	√				√	√
	Unit-2: Statistical Mechanics 2	√	√	√				√	√
	Unit-3: Mean Field Theories	√	√	√				√	√
	Unit-4: Statistical Mechanics 3	√	√	√				√	√

	Unit-5: Reaction Dynamics	√	√	√				√	√
	Course ID: CHEM-SO42								
	Unit-1: NMR Spectroscopy 3	√	√			√		√	√
	Unit-2: Bio-organic Chemistry			√					
	Unit-3: Medicinal Chemistry 3	√						√	√
	Unit-4: Carbohydrate Chemistry		√						
	Unit-5: Natural Products 4	√						√	√

	Paper								
Semester- IV (contd.) **6 Months**	**Course ID: CHEM-SI 43**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**
	Unit-1: Spectroscopy 2			√		√	√	√	
	Unit-2: Chemistry of the Elements 5		√						
	Unit-3: Chemistry of the Elements 6		√						
	Unit-4: Materials Chemistry 1	√						√	√
	Unit-5: Nanochemistry	√						√	√
	Course ID: CHEM-SO 43								
	Unit-1: Nanoscience & Organic Electronics	√	√					√	√
	Unit-2: Green Chemistry	√		√			√		
	Unit-3: Nucleoside & Nucleotide			√					
	Unit-4: Natural Products as Lead Drug	√		√					√
	Unit-5: Natural Products 5	√		√					√
	Course ID: CHEM-SP 43								
	Unit-1: Solids	√	√	√				√	√
	Unit-2: Group Theory 2	√	√	√					√
	Unit-3: Chemistry of Excited States	√	√	√					√
	Unit-4: Lasers	√	√	√	√			√	√
	Unit-5: Theoretical Spectroscopy	√	√	√					√
	Course ID: CHEM-SI 44 **Inorganic (Specialisation) Project**			√	√	√	√	√	√
	Course ID: CHEM-SO 44 **Organic (Specialisation) Project**			√	√	√	√	√	√
	Course ID: CHEM-SP 44 **Physical (Specialisation) Project**		√	√	√	√	√	√	√

Department of Mathematics

UNDERGRADUATE SECTION

Model Reference: University of Calcutta, Syllabus for Mathematics (Honours)

(NON-CBCS)

Programme Outcomes Nos	Programme Outcomes (PO)
PO A	To prepare the students for a successful career in teaching or other professions as well as to motivate them for higher education and to take research as a career
PO B	To provide strong foundation in basic sciences and mathematics
PO C	To identify, formulate and analyze complex scientific problems reaching substantiated conclusions
PO D	To develop individual and team work by functioning effectively as an individual or as a member in a group in computer laboratory classes
PO E	To develop computational , logical and analyzing ability in solving different problems of Mathematics
PO F	To develop communicating ability, prepare effective presentations, and give and receive clear instructions
PO G	To develop the ability to engage in independent and life-long learning in the current context of technological change
PO H	To inculcate scientific temperament in the young minds and outside the scientific community

Programme Specific Outcomes Nos	Programme Specific Outcomes (PSO)
PSO 1	To apply knowledge in emerging and varied areas of Mathematics for higher studies, research and industries related to software applications
PSO 2	To develop leadership and managerial skills and understanding the need for lifelong learning to be a competent professional
PSO 3	To equip with front level communication technologies (ICT) for innovating ideas and solutions to existing/novel challenges
PSO 4	To be acquainted with good laboratory practices

Mapping of PO & PSO for Mathematics Honours Syllabus of University of Calcutta

Programme Specific Outcomes (PSO) Nos	Programme Specific Outcomes (PSO)							
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
PSO 1	√	√	√		√	√		
PSO 2	√	√	√	√		√	√	√
PSO 3	√	√	√		√			
PSO 4	√	√	√	√				

Programme Outcome mapping for Partial Semester wise Courses in Mathematics Honours under University of Calcutta

TABLE I

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)							
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
Part I	**Module I** Group A: Classical Algebra Group B: Modern Algebra I	√	√	√		√	√		√
Papers I & II	**Module II:** Group A: Analytical Geometry of 2D Group B: Analytical Geometry of 3D - I Group C: Vector Algebra	√	√	√		√	√		√
	Module III: Group A: Analysis I Group B: Evaluation of Integrals	√	√	√		√	√		√
	Module IV: Group A: Linear Algebra Group B: Vector Calculus I	√	√	√		√			√

TABLE II

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)							
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
Part II **Papers III & IV**	Module V: Group A: Modern Algebra II Group B: LPP & Game Theory	√	√	√		√		√	√
	Module VI: Group A: Analysis II Group B:Differential Equation I	√	√	√				√	√
	Module VII: Group A:Real-valued Functions of Several Real Variables Group B: Application of Calculus	√	√				√		√
	Module VIII: Group A: Analytical Geometry of 3D - II Group B: Analytical Statics I Group C: Analytical Dynamics of a Particle I	√	√		√	√		√	

TABLE III

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)							
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
Part III **Papers V, VI, VII & VIII**	Module IX: Group A: Analysis III	√	√	√		√			√
	Module X: Group A: Linear Algebra & Modern Algebra II Group B: Tensor Calculus Group C: Differential Equation II OR Graph Theory	√	√	√		√		√	√
	Module XI: Group A: Vector Calculus II Group B: Analytical Statics II Group C: Analytical Dynamics of a Particle II	√	√	√				√	√
	Module XII: Group A: Hydrostatics Group B: Rigid Dynamics	√	√	√				√	√
	Module XIII: Group A: Analysis IV Group B: Metric Space Group C: Complex Analysis	√	√	√		√	√		√
	Module XIV: Group A:Probability Group B: Statistics	√	√	√		√	√	√	√
	Module XV: Group A: Numerical Analysis Group B: Computer Programming	√			√	√	√	√	√
	Module XVI: Practical	√		√	√	√	√	√	√

DEPARTMENT OF MATHEMATICS

POST GRADUATE SECTION

AFFILIATED TO THE UNIVERSITY OF CALCUTTA

- **The Course entitled M.Sc in Mathematics was conducted successfully from September 2006 to July 2018 in the Post Graduate Department of Mathematics with full academic autonomy granted by the affiliating University, i.e. the University of Calcutta. The Syllabus was designed by the Faculty of Mathematics under guidance of the Expert Committee appointed for that purpose. The time line of AQAR 2017-18 rightfully includes the Syllabus of the autonomous course.**
- **The CBCS course under the academic control of the University of Calcutta came into effect from August 2018. The First Batch of PG students following the CBCS Course is awaiting Semester IV examination. Therefore, it is premature to indicate the impact of the projected POs & PSOs in the CBCS syllabus designed by the University of Calcutta.**

Model Reference: University of Calcutta, Syllabus for Autonomous Course

M.Sc. in Mathematics at Lady Brabourne College in effect from 2006-07 to 2018-19

Programme Outcomes Nos	Programme Outcomes (PO)
PO A	To prepare the students for a successful career in teaching or other professions as well as to motivate them for higher education and to take research as a career
PO B	To provide strong foundation in basic sciences and mathematics
PO C	To identify, formulate and analyze complex scientific problems reaching substantiated conclusions
PO D	To develop individual and team work by functioning effectively as an individual or as a member in a group in computer laboratory classes
PO E	To develop computational , logical and analyzing ability in solving different problems of Mathematics
PO F	To develop communicating ability, prepare effective presentations, and give and receive clear instructions
PO G	To develop the ability to engage in independent and life-long learning in the current context of technological change
PO H	To inculcate scientific temperament in the young minds and outside the scientific community

Programme Specific Outcomes Nos	Programme Specific Outcomes (PSO)
PSO 1	**To apply knowledge in emerging and varied areas of Mathematics for higher studies, research and industries related to software applications**
PSO 2	**To develop leadership and managerial skills and understanding the need for lifelong learning to be a competent professional**
PSO 3	**To equip with front level communication technologies (ICT) for innovating ideas and solutions to existing/novel challenges**
PSO 4	**To be acquainted with good laboratory practices**
PSO 5	**To develop research oriented skills by implementing project work in the final semester course**

Mapping of PO & PSO

Programme Specific Outcomes (PSO) Nos	Programme Specific Outcomes (PSO)							
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
PSO 1	√	√	√		√	√		
PSO 2	√			√		√	√	√
PSO 3	√				√			
PSO 4	√			√				
PSO 5	√	√	√		√	√	√	

Programme Outcome mapping for Semester wise Courses in PG Mathematics under University of Calcutta

TABLE I

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)							
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
Part I **Semester I 6 Months**	Module I Real Analysis I & Topology I	√	√	√			√		√
	Module II Complex Analysis I & Functional Analysis I & Calculus on R^n	√	√	√					√
	Module III Ordinary Differential Equations & Discrete Mathematics	√	√	√					√
	Module IV Algebra I & Object Oriented Programming (Practical)	√	√	√	√	√	√	√	
	Module V General Principles of Mechanics & Calculus of Variations & Optimization & Operation Research I	√	√	√		√		√	
Part I **Semester II 6 Months**	Module VI Real Analysis II & Topology II	√	√	√			√		
	Module VII Complex Analysis II & Functional Analysis II (including Generalized Functions)	√	√	√			√		√
	Module VIII Algebra II	√	√	√			√		
	Module IX Partial Differential Equations & Integral Equations & Integral Transforms	√	√	√	√	√		√	
	Module X Mathematical Logic & Optimization & Operation Research II	√	√	√	√	√			√

TABLE II

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)							
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
Part II **Semester III** **6 Months**	Module XI Numerical Analysis & Practical (Hand Calculator)	√	√		√	√	√		√
	Module XII Stochastic Processes & Stochastic Differential Equations	√	√	√		√		√	√
	Module XIII Data Management & Design of Algorithm	√	√	√		√			√
	Module XIV Elective I	√	√	√		√		√	√
	Module XV Elective II	√	√	√		√		√	√
Part II **Semester IV** **6 Months**	Module XVI Differential Geometry & Manifold Theory & Graph Theory	√	√	√					√
	Module XVII Numerical Practical	√	√		√	√	√		
	Module XVIII Elective I	√	√	√		√		√	√
	Module XIX Elective II	√	√	√		√		√	√
	Module XX PROJECT	√	√	√	√	√	√	√	√

Department of Economics

Model Reference: University of Calcutta, Syllabus for Economics (Honours)

(NON-CBCS)

Programme Outcomes No.s	Programme Outcomes (PO)
PO A	**To motivate and prepare the students for pursuing higher education in Economics and inter-allied disciplines and to make them competent to pursue a successful career in academics / industry / entrepreneurship.**
PO B	**To provide strong foundation in Economic theory, focusing on their applied and policy issues, Mathematics and Statistics and to develop the ability of applying quantitative tools and techniques in solving economic problems.**
PO C	**To develop the ability to engage in independent and life-long learning in the context of dynamic socio- politico-economic scenarios.**
PO D	**To develop communication skills such as being able to comprehend and write reports on socio-economic problems, design documentation, make effective presentations and give and receive clear instructions.**
PO E	**To inculcate logical, data based and analytical temperament in young minds.**

Programme Specific Outcomes No.s	Programme Specific Outcomes (PSO)
PSO 1	**Possess essential knowledge required to innovate and design effective solutions in various contemporary and emerging areas of Economics.**
PSO 2	**Engage and succeed in academic / professional careers through team work, leadership and managerial skills, ethical behavior, effective communication and understanding the need for lifelong learning.**
PSO 3	**Develop analytical abilities through interactive and participative learning.**
PSO 4	**Utilize Information and Communication Technology (ICT) and its multi-faceted dimensions for innovating ideas and acquiring new ideas in emerging varied areas of Economics**

Mapping of PO & PSO for Economics Honours Syllabus

University of Calcutta

Programme Specific Outcomes (PSO) No.s	Programme Outcomes (PO)				
	A	**B**	**C**	**D**	**E**
PSO 1	√	√	√	√	√
PSO 2	√		√	√	
PSO 3	√	√	√	√	√
PSO 4	√	√	√	√	√

Programme Outcome mapping for Partial Semester wise Courses in Economics Honours

University of Calcutta

TABLE I

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)				
		A	**B**	**C**	**D**	**E**
Part I	IA Microeconomic Principles	√	√	√	√	√
	IB Macroeconomic Principles	√	√	√	√	√
Papers I & II	IIA Statistics for Economics	√	√	√		√
	IIB Mathematics For Economics	√	√	√		√

TABLE II

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)				
		A	**B**	**C**	**D**	**E**
Part II **Papers III, & IV**	IIIA Microeconomics	√	√	√	√	√
	IIIB Macroeconomics	√	√	√	√	√
	IV A Development Theory	√	√	√	√	√
	IV B Indian Economy Since Independence	√	√	√	√	√

TABLE III

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)				
		A	**B**	**C**	**D**	**E**
Part III **Papers V, VI, VII & VIII**	V A International Economics	√	√	√	√	√
	V B Public Economics	√	√	√	√	√
	VI A Comparative Development Experience	√		√	√	√
	VI B Contemporary Economic Issues - India and West Bengal	√	√	√	√	√
	VII A Statistics and Basic Econometrics	√	√	√		√
	VII B Applied Economics Group A- Application of Economics to Managerial Issues Group B - Mathematical Economics	√ √	√ √	√ √	√	√ √
	VIII A Indian Economic History	√		√	√	√
	VIII B Term Paper	√	√	√	√	√

DEPARTMENT OF ZOOLOGY
PROGRAM OUTCOME, PROGRAM SPECIFIC OUTCOME AND COURSE OUTCOME
NON-CBCS

B.Sc. IN ZOOLOGY

Model Reference: Syllabus for Zoology (Honours), University of Calcutta, with effect from 2016-18

- The Course entitled B.Sc. Honours in Zoology strictly follows the syllabus of the affiliating University, i.e. The University of Calcutta. The Syllabus was designed by the University in 2010 and again restructured in 2016 including eight papers with two units each.
- The CBCS course came into effect from August 2018. The First Batch of UG students following the CBCS Course is awaiting Semester IV examination. Therefore, it is premature to indicate the impact of the projected POs & PSOs in the CBCS syllabus designed by the University of Calcutta.

PROGRAM OUTCOME

Programme Outcomes Nos	Programme Outcomes (PO)
PO A	To provide a sound knowledge and understanding of basic and applied Zoology
PO B	To prepare the students for a successful career in teaching, wildlife projects, industries, etc. and also to motivate them for higher education and to take up research as a career
PO C	Ability to use modern techniques and handle sophisticated instruments for experimental work; apply current software for data analysis
PO D	To develop the ability to communicate and comprehend; documentation and effective writing of laboratory notebooks, field reports and environmental audit reports, prepare effective presentations, and give and receive clear instructions
PO E	To develop individual and team work by functioning effectively as an individual or as a member in a group in laboratory classes
PO F	To develop an opportunity to work in interdisciplinary groups or areas
PO G	To inculcate scientific temperament in the young minds and outside the scientific community
PO H	Apply the knowledge and understanding of Zoology to one's own life and work
PO I	Develop leadership and managerial skills and understanding the need for lifelong learning to be a competent professional

PROGRAM SPECIFIC OUTCOME

Programme Specific Outcomes Nos	Programme Specific Outcomes (PSO)
PSO 1	Understand the nature and basic concepts of Cell biology, Genetics, Taxonomy, Physiology, Biochemistry, Microbiology, Immunology, Biotechnology, Molecular Biology, Developmental Biology, Ecology, Applied Zoology, etc.
PSO 2	Understand the complex evolutionary processes and behaviour of animals
PSO 3	Understand biodiversity and protection of endangered species, environmental conservation processes and its importance, pollution control
PSO 4	Gain knowledge of Agro based Small Scale industries like sericulture, apiculture, pearl culture, fish farming, vermicompost preparation, etc.
PSO 5	Understand the basic concepts of genetics and its importance in human health and medicine
PSO 6	To be acquainted with good laboratory practices and safety measures, understand and apply ethical principles and commit to professional ethics and responsibilities

Programme Outcome mapping for Annual Courses in Zoology Honours under University of Calcutta

TABLE I

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)								
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
PART 1 (1 year)	PAPER 1: UNIT I Diversity & Functional Anatomy of Non-chordate & Chordate Forms	√	√					√	√	√
	PAPER 1: UNIT II Cell Biology and Genetics	√	√				√	√	√	√
	PAPER 2, UNIT I Developmental Biology	√	√					√	√	√
	PAPER 2, UNIT II Practical	√	√	√	√	√	√	√	√	√
PART 2 (1 year)	PAPER 3, UNIT I Systematics, Evolutionary Biology & Animal Behaviour	√	√					√	√	√
	PAPER 3, UNIT II Ecology,	√	√		√		√	√	√	√

	Biodiversity and Conservation									
	PAPER 4, UNIT I Animal Physiology and Biochemistry	√	√	√			√	√	√	√
	PAPER 4, UNIT II (PRACTICAL)	√	√	√	√	√	√	√	√	√
PART 3 (1 year)	PAPER 5, UNIT I Molecular Biology	√	√	√			√	√	√	√
	PAPER 5, UNIT II Parasitology, Microbiology and Immunology	√	√	√			√	√	√	√
	PAPER 6, UNIT I Integration Biology & Homeostasis	√	√					√	√	√
	PAPER 6, UNIT II Animal Biotechnology & Applied Zoology	√	√	√			√	√	√	√
	PAPER 7 Practical	√	√	√	√	√	√	√	√	√
	PAPER 8 Practical	√	√	√	√	√	√	√	√	√

TABLE 2

Mapping of PO & PSO for Zoology Honours Syllabus of University of Calcutta

Programme Specific Outcomes (PSO) Nos	**Programme Outcomes (PO)**								
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
PSO 1	√	√	√	√	√	√	√	√	√
PSO 2	√	√		√	√	√	√	√	√
PSO 3		√		√	√	√	√		
PSO 4	√	√	√	√	√	√	√	√	√
PSO 5	√	√	√			√	√	√	
PSO 6		√	√	√	√				√

COURSE OUTCOME

PART – I

PAPER 1: UNIT I
Diversity & Functional Anatomy of Non-chordate & Chordate Forms

After successfully completing this course, students will be able to:

CO1	Have an idea of animal architecture and Bauplan concept of invertebrates and vertebrates
CO2	Know the Classification of invertebrates till Echinoderms and till Mammalia in vertebrates
CO3	Have knowledge on locomotion and reproduction in Protozoa, Polymorphism in Cnidaria, Coral reefs, Metamerism in Annelida, Canal system of Porifera, Water vascular system in Echinoderms, Respiratory and nervous system in arthropods and molluscs.
CO4	Get an inner view into the Comparative anatomy & structural organization of aortic arches in vertebrates, respiratory structure in teleosts, Ruminant stomach, feathers in birds, Exoskeletal structure in Mammals, Poison apparatus and biting mechanism of poisonous snake and Structure of pharynx and feeding mechanism in *Branchiostoma*

PAPER 1: UNIT II
Cell Biology and Genetics

After successfully completing this course, students will be able to:

CO1	Describe the structure and function of cell, cell organelles and plasma membrane
CO2	Have a concept of different types of microscopy used for cellular studies
CO3	Explain chromosomal basis and determination of gene action from genotype to phenotype and concepts of inheritance.
CO4	Know the Molecular basis of DNA replication, protein synthesis, post transcriptional modifications, RNA processing
CO5	Have a concept of alleles, linkage, crossing over, mutation, chromosomal aberration, dosage compensation, sex determination and cytoplasmic inheritance

PAPER 2, UNIT I
DEVELOPMENTAL BIOLOGY

After successfully completing this course, students will be able to:

CO1	Have knowledge on the basic concepts of the processes of gametogenesis, fertilization, cleavage, gastrulation, development of extraembryonic membranes, eye
CO2	Get an idea on different types of placenta and organizer concept
CO3	Concepts of cryopreservation of gametes and embryo of man, IVF and embryo transfer in man
CO4	Knowledge on characteristic features of stem cells, potency and niche, markers in human stem cell, potential application of stem cells as regenerative medicine

PAPER 2, UNIT II {PRACTICAL}
Animal forms & comparative anatomy, Cytological methods & Genetics, Osteology & Embryology

After successfully completing this course, students will be able to:

CO1	Understand the internal organ systems of one non-chordate (*Periplaneta)* and one chordate (*Oreochromis)*
CO2	Have knowledge on pedigree analysis, meiotic stages of testis of grasshopper
CO3	Use stage and ocular micrometer for cellular measurements
CO4	Identify bones, larval forms and embryological stages

PART-II

PAPER 3, UNIT I
Systematics, Evolutionary Biology & Animal Behaviour

After successfully completing this course, students will be able to:

CO1	Differentiate between Taxonomy, Systematics and Classification
CO2	Have a thorough knowledge of the Concept of dendogram and cladogram, Biological Species Concept, modes of speciation, Type concept and Basic principle and use of DNA bar coding in species identification
CO3	Have a concept of Natural selection, Synthetic theory, Hardy-Weinberg equilibrium, Genetic drift, founder effect and population bottleneck, Bathymetric and discontinuous distribution, Barriers and dispersals
CO4	Know about the Zoogeographical realms and adaptive radiation and how animals are adapted for xeric, cursorial, arboreal and other types of life
CO5	Have knowledge on the origin of birds and evolution of horse
CO6	Explain different types of behaviour in animals -Instinctive and learning behaviour, fixed action pattern, Communication in honey bees, Altruism, kinship and selfishness, Echolocation in bat, Migration in birds
CO7	Can analyse on cost and benefit of parental investment and parent-offspring conflict

PAPER 3, UNIT II
Ecology, Biodiversity and Conservation

After successfully completing this course, students will be able to:

CO1	Have a thorough idea on different types of ecosystem, concept of structure and function of ecosystem and relation between Community and ecosystem.
CO2	Have a basic idea on population attributes, population interactions and Population growth models
CO3	Correlate on Animal's space and resource use and Resource partitioning
CO4	Know about Ecological succession, concept of Climax and have a brief idea on El nino, La nino and their consequences
CO5	Have a thorough knowledge on biodiversity and conservation and conservation strategies
CO6	Concept of wildlife, wildlife heritage of India, IUCN categories, Protected area and man-animal conflct
CO7	Know about Environmental audit and impact assessment and Role of NGO's in wildlife conservation in India

PAPER 4, UNIT I
Animal Physiology and Biochemistry

After successfully completing this course, students will be able to:

CO1	Have an inner view into the Physiology of excretion, osmo-regulation in vertebrates, skeletal muscle contraction, vision and hibernation and aestivation
CO2	Have knowledge on Origin and propagation of nerve impulse and Temperature regulation
CO3	Classify biomolecules like carbohydrates, proteins, Nucleic acids and lipids and their structures and Structure and function of neuro-transmitters
CO4	Have knowledge on the metabolic pathways involving the above biomolecules
CO5	Give an idea about how the oxidative phosphorylation and electron transport chain are integrated

PAPER 4, UNIT II (PRACTICAL)
Ecological methods, Systematic & Evolutionary Biology, Non-Chordates & Chordates, Animal Physiology and Biochemistry

After successfully completing this course, students will be able to:

CO1	Determine pH, dissolved oxygen and carbon dioxide of water samples
CO2	Study micro arthropods of water and soil samples and do Zooplankton count by standard methods, Counting of haemocytes in cockroach
CO3	Identify and classify invertebrates and vertebrates by studying their external characters and prepare keys
CO4	Do qualitative tests for carbohydrates, proteins, urea, uric acid and fats and quantify the amount of protein in a sample
CO5	Prepare Normal, molar and standard solutions, phosphate buffers, and do serial dilutions

PART III

PAPER 5, UNIT I
Molecular Biology

After successfully completing this course, students will be able to have knowledge on:

CO1	Principles and techniques used for genome analysis - Restriction enzymes, Cloning vectors, Construction of genomic DNA and cDNA libraries, PCR, DNA fingerprinting and Blotting
CO2	Principles and techniques used for protein analysis - SDS PAGE, affinity chromatography and Gel Filtration chromatography, immuno-electrophoresis, Western blot
CO3	Regulation of gene expression (Operon concept) and Epigenetic regulation
CO4	Recombination, DNA repair mechanism, concept of apoptosis and transposable genetic element
CO5	Cell cycle regulation, proto-oncogenes and oncogenes and the causes of cancer and also molecular basis and detection technique for human genetic disorders

PAPER 5, UNIT II
Parasitology, Microbiology and Immunology

After successfully completing this course, students will be able to have knowledge on:

CO1	Inter-specific associations, Origin and evolution of parasitism with special reference to nematodes
CO2	Host-parasite interaction, parasitic adaptations in internal parasites with special reference to protozoa and helminths
CO3	Life cycle of some important parasites and modes of transmission, concept of vector
CO4	Characterization and classification of bacteria, Techniques of microorganism culture, Control of micro-organisms
CO5	Microbes in relation to common diseases of man and control
CO6	Cells and organs associated with immune system; Innate and adaptive immunity
CO7	Concept of Antigens, Antibody, Cytokines, adjuvants, Complement proteins – pathways and activation, MAC formation
CO8	Humoral and cell mediated immunity, T-cell and B-cell, Macrophage, MHC
CO9	Monoclonal antibody production

PAPER 6, UNIT I
Integration Biology & Homeostasis

After successfully completing this course, students will be able to have knowledge on:

CO1	Neuro-endocrine integration and general concept of hormone action and receptors
CO2	Types, mode of action and behaviour modulation of chemical messengers
CO3	Mechanism of hormone action - Biosynthesis, secretion, mode of action, functional significance and regulation of different hormones
CO4	Insect hormones, Environmental signaling in sex reversals in fish and mollusc,Biological light production in animals, Biological rhythm
CO5	Endocrine regulation of estrous and menstrual cycle.

PAPER 6, UNIT II
Animal Biotechnology & Applied Zoology

After successfully completing this course, students will be able to have knowledge on:

CO1	Production of transgenic animals and Contribution of transgenic animals to human welfare
CO2	Modern techniques of fish hybridization and induced breeding in carps.
CO3	Application of biotechnology in Sericulture, Lac culture, Apiculture, Pearl culture practice, Prawn culture
CO4	Integrated pest management and biological control of pests and Principle of LD50 and LC50 and their application in applied Zoology
CO5	Cell culture technology
CO6	Principle of gene therapy

PAPER 7 PRACTICAL
Molecular Biology, Parasitology & Microbiology, Immunology, Histological techniques and staining methods, Adaptations

After successfully completing this course, students will be able to:

CO1	Use Paper Chromatography and TLC for separation of biomolecules
CO2	Use colorimeter and spectrophotometer for Quantitative estimation of DNA in solution
CO3	Identify, characterize and classify parasites and bacteria by different staining techniques
CO4	Determine human blood group
CO5	Fix tissue, prepare blocks by paraffin embedding, use microtome for section cutting, stain, mount and identify different histological tissues
CO6	Identify different stages of estrous cycle in white rat
CO7	Analyze adaptive features for cursorial, aquatic, desert, Volant, deep sea and parasitic mode of life.

PAPER 8 PRACTICAL
Instrumentation, Report on Environmental audit, Biostatistics

After successfully completing this course, students will be able to:

CO1	Know the Principle/function and laboratory use of different instruments
CO2	Prepare a report on environmental audit of faunal diversity along with ecological notes and photographic documentations
CO3	Biodiversity assessment of any Ecosystem, assessment of man-wildlife conflict, eco-tone, edge effect, eco-sensitivity, economics of the native inhabitants, logging and lopping effect, conservation process practiced etc. and prepare a field report
CO4	Analyse any data (Mean, Mode, Median, Probability), Hypothesis testing (Chi-square, t-test, Correlation test)

DEPARTMENT OF ZOOLOGY
PROGRAM OUTCOME, PROGRAM SPECIFIC OUTCOME AND COURSE OUTCOME

M.Sc. IN ZOOLOGY

Model Reference: Syllabus for M.Sc. Zoology (Semester) Course, University of Calcutta

- The Course entitled M.Sc. in Zoology was started in 2016 and the first batch of students appeared for their final fourth semester conducted successfully in June 2018 in the Post Graduate Department of Zoology. The second batch of PG students appeared for their Semester 1 examination in December, 2017 and Semester 2 in June, 2018. Although with financial autonomy granted by the affiliating University, i.e. Calcutta University, the syllabus followed was totally as that followed by Calcutta University.
- The CBCS course under the exclusive control of the University of Calcutta came into effect from August 2018. The third batch of PG students following the CBCS Course is yet to appear for their Semester IV examination. Hence it is premature to analyse the impact of the projected POs & PSOs in the CBCS syllabus designed by the University of Calcutta.

PROGRAM OUTCOME

Programme Outcomes Nos	Programme Outcomes (PO)
PO A	To provide a sound knowledge and understanding of basic and applied Zoology
PO B	To prepare the students for a successful career in teaching, wildlife projects, industries, etc. and also to motivate them for higher education and to take up research as a career
PO C	Ability to use modern techniques and handle sophisticated instruments for experimental work; apply current software for data analysis
PO D	To develop the ability to communicate and comprehend; documentation and effective writing of laboratory notebooks, field reports and environmental audit reports, prepare effective presentations, and give and receive clear instructions
PO E	To develop individual and team work by functioning effectively as an individual or as a member in a group in laboratory classes
PO F	To develop an opportunity to work in interdisciplinary groups or areas
PO G	To inculcate scientific temperament in the young minds and outside the scientific community
PO H	Apply the knowledge and understanding of Zoology to one's own life and work
PO I	Develop leadership and managerial skills and understanding the need for lifelong learning to be a competent professional

PROGRAM SPECIFIC OUTCOME

Programme Specific Outcomes Nos	Programme Specific Outcomes (PSO)
PSO 1	Understand the nature and basic concepts of Cell biology, Genetics, Taxonomy, Physiology, Biochemistry, Microbiology, Immunology, Biotechnology, Molecular Biology, Developmental Biology, Ecology, Applied Zoology, etc.
PSO 2	Understand the complex evolutionary processes and behaviour of animals
PSO 3	Understand biodiversity and protection of endangered species, environmental conservation processes and its importance, pollution control
PSO 4	Gain knowledge of Agro based Small Scale industries like sericulture, apiculture, pearl culture, fish farming, vermicompost preparation, etc.
PSO 5	Understand the basic concepts of genetics and its importance in human health and medicine
PSO 6	To be acquainted with good laboratory practices and safety measures, understand and apply ethical principles and commit to professional ethics and responsibilities

TABLE I

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)								
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
SEMESTER 1	Paper ZCT 101 - Structure & Functions of Nonchordates	√	√					√	√	√
	Paper ZCT 102 - Ecological theories and applications	√	√		√		√	√	√	√
	Paper ZCT 103 - Genetics and Genetic Engineering	√	√	√			√	√	√	√
	Paper ZCT 104 - Tissue structure, Function and Chemistry	√	√					√	√	√
	Paper ZCT 105 - Parasites and Immunity	√	√				√	√	√	√
	Paper ZCP 106 - Laboratory course	√	√	√	√	√		√	√	√
SEMESTER 2	Paper ZCT 207 - Structure &	√	√					√	√	√

	Functions of Chordates									
	Paper ZCT 208 - Comparative Animal Physiology	√	√					√	√	√
	Paper ZCT 209 - Endocrinology and Neuroscience	√	√					√	√	√
	Paper ZCT 210 - Cell and Receptor Biology	√	√				√	√	√	√
	Paper ZCT 211 - Biochemistry and Molecular biology	√	√	√			√	√	√	√
	Paper ZCP 212 - Laboratory course	√	√	√	√	√		√	√	√
SEMESTER 3	Paper ZCT 313 - Taxonomy and Biodiversity	√	√		√		√	√	√	√
	Paper ZCT 314 - Evolution and Animal Behaviour	√	√		√			√	√	√
	Paper ZCT 315 - Development and Differentiation	√	√					√	√	√
	Paper ZCP 316 - Laboratory course	√	√	√	√	√		√	√	√
	Paper ZET 301 - Elective I Theory (Population and Community Ecology)	√	√		√		√	√	√	√
	Paper ZEP 301 - Elective I Practical (Population and Community Ecology)	√	√	√	√	√		√	√	√
	Paper ZET 302 -	√	√					√	√	√

	Elective I Theory (Molecular Endocrinology)									
	Paper ZEP 302 - Elective I Practical (Molecular Endocrinology)	√	√	√	√	√		√	√	√
SEMESTER 4	Paper ZCT 417 - Conservation Biology and Wild life	√	√		√		√	√	√	√
	Paper ZCT 418 - Biostatistics, Bioinformatics and Instrumentation	√	√		√		√	√	√	√
	Paper ZCT 419 - Biotechnology and Applications	√	√	√			√	√	√	√
	Paper ZCP 420 - Laboratory course	√	√	√	√	√		√	√	√
	Paper ZET 401 - Elective II Theory (Ecological Resources and Management)	√	√		√		√	√	√	√
	Paper ZEP 401 - Elective II Practical (Ecological Resources and Management)	√	√	√	√	√		√	√	√
	Paper ZET 402 - Elective II Theory (Reproductive Endocrinology)	√	√					√	√	√
	Paper ZEP 402 - Elective II Practical (Reproductive Endocrinology)	√	√	√	√	√		√	√	√

TABLE 2

Mapping of PO & PSO for Zoology Honours Syllabus of University of Calcutta

Programme Specific Outcomes (PSO) Nos	Programme Outcomes (PO)								
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
PSO 1	√	√	√	√	√	√	√	√	√
PSO 2	√	√		√	√	√	√	√	√
PSO 3		√		√	√	√	√		
PSO 4	√	√	√	√	√	√	√	√	√
PSO 5	√	√	√			√	√	√	
PSO 6		√	√	√	√				√

COURSE OUTCOME

SEMESTER – I

Paper ZCT 101 - Structure & Functions of Nonchordates

After successfully completing this course, students will be able to have knowledge on:

CO1	Non chordate body forms and adaptive significance
CO2	Mechanism of feeding and physiology of digestion and excretion in groups of invertebrates
CO3	Mechanoreception, Chemoreception & Photoreception in invertebrates
CO4	Functional form variations of reproductive organs and modes of reproduction in different groups of invertebrates
CO5	Micromorphology and mechanism of Contractile motility in nonchordates, Movements of cilia and flagella, Hydrostatic evasive movements and Insect flight mechanism.
CO6	Metamorphosis and moulting and their hormonal control

Paper ZCT 102 - Ecological theories and applications

After successfully completing this course, students will be able to have knowledge on:

CO1	Concept of Population growth and control and metapopulation
CO2	Community structure and nature
CO3	System concept, System structure and function
CO4	Ecology of biological and industrial invasion (Eutrophication, Acidification)
CO5	Biodegradation and Bioremediation
CO6	Wastes in Ecosystem and management (Agricultural wastes, Biomedical wastes and Domestic waste)

Paper ZCT 103 - Genetics and Genetic Engineering

After successfully completing this course, students will be able to have knowledge on:

CO1	Organisation of genes and chromosomes
CO2	Imprinting of genes, Epigenetic regulation by DNA methylation
CO3	Somatic Cell Genetics and hybridoma
CO4	Bacterial conjugation, transformation and transduction
CO5	Genetic regulation of cell division in yeast and eukaryotes, Molecular basis of cellular check points and Molecular basis of neoplasia
CO6	Recombination and repair
CO7	Recombinant DNA technology (Cloning vectors, Genomic/cDNA Library, Southern and Northern analysis, Western Blotting, DNA Microarray, FISH and GISH)

Paper ZCT 104 - Tissue structure, Function and Chemistry

After successfully completing this course, students will be able to have knowledge on:

CO1	Concept of structure and function of different tissues (epithelial, muscle, bone, connective tissue)
CO2	Extra cellular matrix-organization and chemistry
CO3	Principles and methods of histochemical localization of carbohydrates, proteins, nucleoproteins and lipids in tissues
CO4	Diagnostic histochemistry and histophysiology

Paper ZCT 105 - Parasites and Immunity

After successfully completing this course, students will be able to have knowledge on:

CO1	Vector Biology and Biology of Protozoan parasites, Helminthic parasites, Nematode parasites and Arthropod Parasites
CO2	Concept of the immune system, innate, cellular immunity and humoral immunity
CO3	Concept of Antigen presentation and antigen recognition
CO4	Host-parasite interaction

Paper ZCP 106 - Laboratory course

After successfully completing this course, students will be able to have knowledge on:

CO1	Anatomy of different groups of invertebrates
CO2	Qualitative and Quantitative estimation of Zooplankton communities and terrestrial community
CO3	Estimation of free carbon dioxide, pH, alkalinity, hardness and salinity of water
CO4	Chromosome preparations from rat bone marrow and polytene chromosomes
CO5	Handling of Drosophila, Drosophila genetic crosses, Induction of mutation in Drosophila by P-M mutagenesis and Karyotyping
CO6	Identification of mammalian tissue sections, Tissue fixation, microtomy and double staining of tissue sections
CO7	Immunological methods & Identification of parasitic forms

SEMESTER 2

Paper ZCT 207 - Structure & Functions of Chordates

After successfully completing this course, students will be able to have knowledge on:

CO1	Evolutionary significance of protochordates
CO2	Details of the structure and function of the skeletal system, respiration, circulation, excretion, sense organs and nervous system
CO3	Structural adaptations for different modes of life in chordates

Paper ZCT 208 - Comparative Animal Physiology

After successfully completing this course, students will be able to have knowledge on:

CO1	Principles of Animal Physiology and its relation to size and scale of organisms
CO2	Physiology of respiration, excretory system, thermal regulation, blood and body fluids and sense organs
CO3	Physiology of animal behaviour

Paper ZCT 209 - Endocrinology and Neuroscience

After successfully completing this course, students will be able to have knowledge on:

CO1	Classification, structure and functions of hormones, general principles of nature of hormone action, nature of hormone receptors
CO2	Concept of Neurosecretion, Neurogenesis, Neuronal Ageing and death,
CO3	Electrical properties of nerve cells, Overview of synaptic function and neuromuscular junction, aspects of neuronal disorders

Paper ZCT 210 - Cell and Receptor Biology

After successfully completing this course, students will be able to have knowledge on:

CO1	Structural organization and function of cell membrane and intracellular organelles
CO2	Concept of Cell to cell communication, Receptor Biology and Cell signaling
CO3	Cytoskeleton and cell movements

Paper ZCT 211 - Biochemistry and Molecular biology

After successfully completing this course, students will be able to have knowledge on:

CO1	Concept of protein, carbohydrate and lipid metabolism, vitamins and minerals : Free redicals and anti-oxidants
CO2	Enzymes and Bioenergetics
CO3	Concept of DNA replication, transcription and translation
CO4	Antisense and Ribozyme Technologies and DNA based Molecular Markers

Paper ZCP 212 - Laboratory course

After successfully completing this course, students will be able to have knowledge on:

CO1	Comparative anatomy of Circulation and Urogenital systems in Fish and Mice model and other special structures
CO2	Determination of activity of enzymes and characters of Haemocytes and Blood corpuscles
CO3	Identification of endocrine gland sections, estimation of Acetylcholinesterase , estrous cycle stages.
CO4	Cell viability tests and Characterization of haemtaopoietic cells
CO5	Estimation of enzymes, proteins, glucose, DNA isolation and Agarose gel electrophoresis, Thin Layer chromatography

SEMESTER 3

Paper ZCT 313 - Taxonomy and Biodiversity

After successfully completing this course, students will be able to have knowledge on:

CO1	Concept of characters, taxa and species
CO2	Phylogenetic reconstrution, cladistic and related methods, Phenetic methods
CO3	Conceptual framework of Biodiversity, Threats to species diversity, Uncertainties and biodiversity extinction and Global pattern of biodiversity, Management of biodiversity

Paper ZCT 314 - Evolution and Animal Behaviour

After successfully completing this course, students will be able to have knowledge on:

CO1	Evolutionary Process, Natural Selection and Adaptation
CO2	Gene Frequencies in Population
CO3	Patterns and trends in evolution, the Origin and Evolution of Primates
CO4	Principles and mechanisms of animal behaviour, Gene, Environment and Behaviour/Levels of Selection, Cooperation and conflict, Foraging, Aggression, Sensory system and Communication

Paper ZCT 315 - Development and Differentiation

After successfully completing this course, students will be able to have knowledge on:

CO1	Principles of Developmental Biology, Embryonic stem cells
CO2	Gametogenesis, fertilization and early development, Metamorphosis and organogenesis
CO3	Environmental regulation of normal development, Ageing and Senescence
CO4	Sex determination

Paper ZCP 316 - Laboratory course

After successfully completing this course, students will be able to have knowledge on:

CO1	Biodiversity assessment, Measuring species diversity, Diversity Parameters for comparative study of habitats, Community analysis indices
CO2	Quantifying aggressive behaviour, Foraging behaviour, Predatory behaviour, Focal behavioural sampling - Behavioural repertoire,Time activity budgeting
CO3	Evolutionery significance of Isozyme analysis and Pattern of evolution from museum study
CO4	Preparation of different stages of chick embryo, Identification of diagnostic features of the early stages of developing, Developing stages of fish embryo-characteristics and documentation

Paper ZET 301 - Elective I Theory (Population and Community Ecology)

After successfully completing this course, students will be able to have knowledge on:

CO1	Evolutionary Ecology (Evolution and Adaptation, Evolution of life history strategies and social behaviour, Evolution of sex)
CO2	Behavioural Ecology (Optimal foraging, Mating system, Dispersal, Navigation and Migration, Predator Prey Interactions, Behavioural strategies)
CO3	Ecology of Population and Communities (Population dynamics, Metapopulation, Community structure and food web analysis, Metacommunity concepts, Resources and Consumers, Competition, Predation, herbivory and parasitism, coevolution and mutualism)

Paper ZEP 301 - Elective I Practical (Population and Community Ecology)

After successfully completing this course, students will be able to have knowledge on:

CO1	Ecological sampling and census techniques, Morphometric evidences of niche separations.
CO2	Experiments on functional response (prey-predator interactions, etc.) of populations.
CO3	Estimation of biodiversity of terrestrial and aquatic population habitats.
CO4	Preparation of ethogram ad libitum observations on wild fauna
CO5	Behavioural quantification of coexisting populations, Evolutionary studies on adaptive characters

Paper ZET 302 - Elective I Theory (Molecular Endocrinology)

After successfully completing this course, students will be able to have knowledge on:

CO1	Chemical nature and classification of hormones, Nature of hormone action (Hormone receptors, Membrane receptors, G-proteins, Hormonal regulation through differential gene expression)
CO2	Production of hormones by DNA technologies
CO3	Biosynthesis, characteristics and functions of hormones: Molecular basis
CO4	Genetic analysis and clinical management of hormonal disorders.

Paper ZEP 302 - Elective I Practical (Molecular Endocrinology)

After successfully completing this course, students will be able to have knowledge on:

CO1	ELISA of hormones
CO2	Identification of endocrine organs and estrous cycle
CO3	Planimetry and oculometry of sections of endocrine glands
CO4	Hemicastration-induced changes in testis

SEMESTER 4

Paper ZCT 417 - Conservation Biology and Wild life

After successfully completing this course, students will be able to have knowledge on:

CO1	Biodiversity extinction and conservation approaches, Theory and analysis of Conservation of populations,
CO2	National and International efforts for conservation, Conservation of Natural Resources
CO3	Wildlife and Wild life Habitat in India
CO4	Management of Wildlife and Wild life Trade & legislation

Paper ZCT 418 - Biostatistics, Bioinformatics and Instrumentation

After successfully completing this course, students will be able to have knowledge on:

CO1	General Principles of biostatistics, Descriptive Statistics (Frequency distribution, Central Tendency, Dispersion, Correlation and Regression), Sampling and Analysis
CO2	Proteins-structure, folding and function, Nucleic acid structure and function, Genomics and Proteomics
CO3	Computational tools and biological databases, Sequence Similarity search tools, Computational Tools for DNA Sequence Analysis
CO4	Advancement in Microscopy, Tools for biological assays (Colorimetric and spectrophotometric analyses, Radioactive methods, Flow cytometry and FACS), Molecular separation techniques (TLC, Ion exchange, SDS PAGE, HPLC).

Paper ZCT 419 - Biotechnology and Applications

After successfully completing this course, students will be able to have knowledge on:

CO1	Cell and tissue culture technology, Biotechnology in improvement of live stock
CO2	Reproductive biotechnology (Cryopreservation, Assisted reproductive technology, In vitro fertilization and embryo transfer, ICSI, Sperm sexing)
CO3	Gene and Somatic cloning techniques, Animal Production technology & Food security
CO4	Environmental and Medical Bio-technology

Paper ZCP 420 - Laboratory course

After successfully completing this course, students will be able to have knowledge on:

CO1	Sampling and census technique for wild life study.
CO2	Basic laboratory techniques (RAPD – PCR, UV - VIS spectrophotometer, ultracentritugation, Microscopy)
CO3	Sex manipulation techniques in fish, Freshwater pearl culture technique, Induced breeding of fish
CO4	Statistical softwares and data analysis, Database and search tools for bioinformatics

Paper ZET 401 - Elective II Theory (Ecological Resources and Management)

After successfully completing this course, students will be able to have knowledge on:

CO1	Habitat and Ecosystem Ecology
CO2	Conservation Ecology (Habitat loss and fragmentation, Theory and analysis of conservation of population, habitats and landscapes, Conservation at genetic levels, Ecological economics)
CO3	Microbial Ecology (Interactions among microbial populations, Microbes and biogeochemical cycling, soil processes, mineral and energy recovery, fuel and biomass production)

Paper ZEP 401 - Elective II Practical (Ecological Resources and Management)

After successfully completing this course, students will be able to have knowledge on:

CO1	Assessment of habitat quality - terrestrial and aquatic systems.
CO2	Productivity determination of different ecosystems - Lindeman's efficiency
CO3	Molecular and statistical methods of ecology / application in ecological analysis
CO4	Microbial analysis of soil and water
CO5	Field methods for wildlife study, GIS and ecological assessment

Paper ZET 402 - Elective II Theory (Reproductive Endocrinology)

After successfully completing this course, students will be able to have knowledge on:

CO1	Endocrinology of female sex cycle, Control of testicular functions
CO2	Modes and methods of male and female fertility control, Endocrine malfunction induced male and female infertility.
CO3	Photoperiodism and endocrinology of photosexual activity, Pheromones and interactions
CO4	Prostaglandins: Structure and functions, Gerantological endocrine profiles, Hormones and manifestations of malignancy

Paper ZEP 402 - Elective II Practical (Reproductive Endocrinology)

After successfully completing this course, students will be able to have knowledge on:

CO1	Androgen bioassay
CO2	Surgical techniques – Unilateral and bilateral ablations of selected endocrine glands.
CO3	Effects of surgical ablation of testis on seminal vesicle and prostate
CO4	Effects of surgical ablation of ovary on uterus.

Department of Botany

UNDERGRADUATE SECTION

Model Reference: University of Calcutta, Syllabus for Botany (Honours) (NON-CBCS)

Programme Outcomes Nos	Programme Outcomes (PO)
PO A	To motivate the students for higher education and to take research as a career as well as to prepare them for a successful career in administrative jobs.
PO B	To provide strong foundation in basic biological science.
PO C	To provide hands on training on experiments of Biological Sciences.
PO D	To develop individual and team work by functioning effectively as an individual or as a member in a group in laboratory classes
PO E	Ability to use modern techniques and to handle different types of sophisticated instruments.
PO F	To develop computational acumen in solving different statistical problems of Botany.
PO G	To develop communicating ability such as being able to comprehend and write effective laboratory notebooks and design documentation, prepare effective presentations, and give and receive clear instructions
PO H	To develop an opportunity to work in interdisciplinary groups
PO I	To develop the ability to engage in independent and life-long learning in the current context of biotechnological research work.
PO J	To inculcate scientific temperament in the young minds and outside the scientific community
PO K	To develop knowledge on Biodiversity and Environmental awareness.
PO L	To explore the treasure of medicinal plants.

Programme Specific Outcomes Nos	Programme Specific Outcomes (PSO)
PSO 1	To apply knowledge in emerging and varied areas of Botany for higher studies, research .
PSO 2	To develop leadership and managerial skills and understanding the need for lifelong learning to be a competent professional
PSO 3	To develop knowledge in community study and study on changing environment in our planet.
PSO 4	To be acquainted with good laboratory practices and safety measures

Mapping of PO & PSO for Botany (Honours) Syllabus of University of Calcutta

Programme Specific Outcomes (PSO) Nos	Programme Outcomes (PO)											
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**
PSO 1	√	√	√	√	√	√	√	√	√		√	√
PSO 2	√			√	√		√	√	√			
PSO 3	√	√			√			√	√	√	√	√
PSO 4	√	√	√	√	√		√					

Programme Outcome mapping for Partial Semester wise Courses in Botany (Honours) under University of Calcutta

TABLE I

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)											
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**
Part I	Module I **Algae & Microbiology**	√	√	√			√						
	Module II **Fungi, Lichen & Plant Pathology**	√	√	√		√							
	Module III **Bryophyte, Paleobotany,Embryology**.	√	√	√		√			√				
Papers I & II	Module IV **Practical Algae,Fungi,Bryophytes.**	√	√		√	√		√			√		

TABLE II

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)											
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**
Part II	Module V **Pteridophytes, Gymnosperm**	√	√	√		√			√				
	Module VI **Ecology & Plant Geography**	√	√	√					√			√	
Papers III & IV	Module VII **Morphology of Angiosperm, Taxonomy of Angiosperm**	√	√	√			√		√			√	√
	Module VII **Practical Pteridophytes & Angiosperm**	√	√		√	√		√			√	√	

TABLE III

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)											
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**
Part III **Papers V, VI, VII & VIII**	Module IX **Biochemistry & Pharmacognosy**	√	√	√					√		√		√
	Module X **Plant Physiology**	√	√	√					√				
	Modue XI **Cell Biology, Plant Breeding, Biometry, biotechnology**	√	√	√					√	√			
	Module XII **Genetics & Molecular Biology**	√	√	√					√	√			
	Module XIII **Practical Biochemistry & Pharmacognosy**	√	√	√	√	√		√	√		√		√
	Module XIV **Practical Plant Physiology & Anatomy**	√			√	√		√	√				
	Modue XV **Practical Cell Biology & Genetics**	√			√	√	√	√	√	√			
	Module XVI **Practical Microbiology & Plant Pathology**.	√		√	√	√		√	√		√		

DEPARTMENT OF BOTANY

POST GRADUATE SECTION

AFFILIATED TO THE UNIVERSITY OF CALCUTTA

- **The Course entitled M.Sc in Botany was conducted successfully from August 2016 to July 2018 in the Post Graduate Department of Botany with full academic autonomy granted by the affiliating University, i.e. the University of Calcutta. The Syllabus was designed by the Faculty of Botany under guidance of the Expert Committee appointed for that purpose. The time line of AQAR 2017-18 rightfully includes the Syllabus of the autonomous course.**
- **The CBCS course under the academic control of the University of Calcutta came into effect from August 2018. The First Batch of PG students following the CBCS Course is awaiting Semester IV examination. Therefore, it is premature to indicate the impact of the projected POs & PSOs in the CBCS syllabus designed by the University of Calcutta.**

Model Reference: University of Calcutta, Syllabus for Autonomous Course M.Sc. in Botany at Lady Brabourne College in effect from 2016-17 to 2018-19

Programme Outcomes Nos	Programme Outcomes (PO)
PO A	To motivate the students for higher education and to take research as a career as well as to prepare them for a successful career in administrative jobs.
PO B	To provide strong foundation in basic biological sciences .
PO C	To provide hands on training on experiments of Biological Science.
PO D	To develop individual and team work by functioning effectively as an individual or as a member in a group in laboratory classes
PO E	Ability to use modern techniques and to handle different types of sophisticated instruments.
PO F	To develop computational acumen in solving different statistical problems of Botany.
PO G	To develop communicating ability such as being able to comprehend and write effective laboratory notebooks and design documentation, prepare effective presentations, and give and receive clear instructions
PO H	To develop an opportunity to work in interdisciplinary groups
PO I	To develop the ability to engage in independent and life-long learning in the current context of biotechnological research work.
PO J	To inculcate scientific temperament in the young minds and outside the scientific community

PO K	**Gain in depth knowledge in the areas of tissue culture and Biotechnology to fulfill the needs of Research work in future.**
PO L	**To develop knowledge on Biodiversity and Environmental awareness.**
PO M	**To explore the treasure of medicinal plants.**

Programme Specific Outcomes Nos	**Programme Specific Outcomes (PSO)**
PSO 1	**To apply knowledge in emerging and varied areas of Botany for higher studies, research .**
PSO 2	**To develop leadership and managerial skills and understanding the need for lifelong learning to be a competent professional**
PSO 3	**To develop knowledge in community study and study on changing environment in our planet.**
PSO 4	**To be acquainted with good laboratory practices and safety measures**
PSO 5	**To develop research oriented skills by implementing project work in the final semester course**

Mapping of PO & PSO of theUniversity of Calcutta, Syllabus for Autonomous Course M.Sc. in Botany at Lady Brabourne College in effect from 2016-17 to 2018-19

Programme Specific Outcomes (PSO) Nos	**Programme Outcomes (PO)**												
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**
PSO 1	√	√	√		√	√	√				√		
PSO 2	√			√			√		√	√	√	√	√
PSO 3	√				√	√		√				√	
PSO 4	√			√	√			√			√		
PSO 5	√	√	√		√	√	√	√	√		√		√

Programme Outcome mapping for Semester wise Courses in PG Botany under University of Calcutta

TABLE I

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)												
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**
Semester I 6 Months	Bot C11 (Theory and Practical) **Phycology**	√	√	√	√			√						
	Bot C12 (Theory and Practical) **Microbiology**	√	√	√	√			√						
	Bot C13 (Theory and Practical) **Plant Anatomy and Developmental Biology**	√	√	√	√			√	√					
	Bot C14 (Theory and Practical) **Cell and Molecular Biology**	√	√		√	√		√						
Semester II 6 Months	Bot C21 (Theory and Practical) **Bryophytes, Pteridophytes, Gymnosperm**	√	√	√	√			√						
	BotC22 (Theory and Practical) **Paleobotany and Palynology**	√	√	√	√			√	√					
	Bot C23 (Theory and Practical) **Taxonomy of angiosperm**	√	√	√	√			√			√		√	
	Bot C24 (Theory and Practical) **Genetics and Genomics**	√			√	√	√	√		√		√		

TABLE II

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)												
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**
Semester III 6 Months	**Bot C31** (Theory and Practical) **Mycology and Plant Pathology**	√	√	√	√	√		√	√		√			
	Bot C32 (Theory and Practical) **Plant Physiology and Biochemistry**	√	√	√	√			√	√					
	Bot C33 (Theory and Practical) **Phytochemistry and Pharmacognosy**	√	√	√	√		√	√	√		√			√
	Bot C 34 (Theory and Practical) **Plant Biotechnology**	√	√		√	√		√		√		√		
Semester IV 6 Months	Bot O 41 **Ecology and Environmental Botany**	√	√	√					√		√		√	
	Bot O 42 **Integrative Plant Biology**	√	√	√					√		√	√		
	Bot O 43 **Special paper**	√	√	√					√		√	√		√
	Bot O 44 **Project work**	√	√		√	√	√	√			√	√		√

Department of Microbiology

UNDERGRADUATE SECTION

Model Reference: University of Calcutta, Syllabus for Microbiology (Honours)

(NON-CBCS)

The Programme Outcomes (PO) of B.Sc. Honours Microbiology Curriculum:

Programme Outcomes Nos	Programme Outcomes (PO)
PO A	To inculcate into the students, the holistic approach not only to the study of the subject, but also to any situation in life in the long run and to provide strong foundation in interdisciplinary approach
PO B	To gather strong, basic knowledge and understanding of the microbiological concepts to support diversification in applied field of microbiology such as biochemical and biomedical, industrial, environment, biotechnology, genetics, agriculture, food etc
PO C	To develop good laboratory skills and a zeal to address a problem from a scientific viewpoint
PO D	To develop excellent communication skills both in written as well as spoken language for developing expertise in good power of articulation while pursuing higher studies , research and industrial exposure.
PO E	To develop the spirit of teamwork, learn to harbour a collaborative approach in workplace and the ability to uphold integrity in work
PO F	To demonstrate key practical skills/ competencies in working with microbes for study and use in the lab as well as outside including the use of good microbiological practices.
PO G	To acquire competence to use microbiology knowledge and skills to analyse problems, to develop the skill of biological data handling as well as statistical analysis of the data
PO H	To become familiar with latest, advanced tools, sophisticated instuments and modern techniques of microbiology and learn the scope for their justified application.
PO I	To develop research approaches and aptitudes to meet the scientific gaps in microbiology and allied interdisciplinary or multidisciplinary fields.
PO J	To set career and professional goals based on a clear outlook of the situation and proper career planning process in higher education, as Academician, Industry professionals and environmental activist.
PO K	To ignite young minds to think innovatively and nurture scientific temper as an outcome of attending several awareness programmes, scientific lectures and interactive sessions

Programme Specific Outcomes Nos	Programme Specific Outcomes (PSO)
PSO 1	Explain the fundamental concepts, core theories, methods and practices in different branches of Microbiology and allied fields of other Biological Sciences.
PSO 2	Identify the microorganisms, classify them on the basis of their morphological characteristics and the relation between them and the environment
PSO 3	Demonstrate a rational understanding of the diversity of microorganisms, their structure, functions, role in biosphere and analyse the diversity by bioinformatics and biostatistics
PSO 4	Apply the tools, technologies and scientific methods for laboratory and conventional investigations safely and formulate valid conclusions based on the results in the field of Microbiology and its associated areas
PSO 5	Describe the role of microbes in human, food and dairy technology, agriculture, process of heritable information in microorganisms and forming new genetic combinations through recombinant DNA
PSO 6	Recognize biosafety measures, intellectual property rights and explore career related options in the field of Microbiology
PSO 7	Employ their knowledge of various structural and enzymatic properties of microbes and fermentation processes in developing environment friendly products or processes

Mapping of PO & PSO for Microbiology (Honours) Syllabus of University of Calcutta

Programme Specific Outcomes (PSO) Nos	Programme Outcomes (PO)										
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
PSO 1	√	√		√	√		√		√	√	√
PSO 2	√	√		√	√	√				√	√
PSO 3	√	√		√	√	√	√		√		√
PSO 4		√	√		√	√	√	√	√		√
PSO 5		√	√	√	√	√		√			√
PSO 6		√		√					√	√	√
PSO 7		√	√		√	√	√	√		√	√

Programme Outcome mapping for Partial Semester wise Courses in Microbiology (Honours) under University of Calcutta

TABLE I

COURSE DURATION	COURSE DETAIL		PROGRAMME OUTCOME (PO)										
			A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Part I	**Paper I** Unit I &II (in both groups A & B)	**Gr A:** Biomolecules	√	√		√	√		√		√	√	√
		Gr B: Biophysical Chemistry & Biometry	√	√		√	√		√		√	√	√
	Paper II Unit I &II (in both groups A & B)	**Gr A:** General Microbiology	√	√		√	√	√		√		√	√
		Gr B: Practical			√		√	√	√		√	√	√

TABLE II

COURSE DURATION	COURSE DETAIL		PROGRAMME OUTCOME (PO)										
			A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Part II	**Paper III** Unit I &II (in both groups A & B)	**Gr A:** Cellular & Molecular Biology	√	√		√	√			√	√	√	√
		Gr B: Metabolism & Bioenergetics	√	√					√		√	√	√
	Paper IV Unit I &II (in both groups A & B)	**Gr A:** Environmental & Food Microbiology	√	√		√			√		√	√	√
		Gr B: Practical			√		√	√	√		√	√	√

TABLE III

COURSE DURATION	COURSE DETAIL		PROGRAMME OUTCOME (PO)										
			A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Part III	**Paper V** Unit I &II (in both groups A & B)	**Gr A:** Microbial Genetics	√	√		√	√			√	√	√	√
		Gr B: Industrial Microbiology & Recombinant Technology	√	√		√	√			√	√	√	√
	Paper VI Unit I &II (in both groups A & B)	**Gr A:** Medical Microbiology & Virology	√	√				√	√	√	√	√	√
		Gr B: Immunology	√	√							√	√	√
	Paper VII	**Unit I:** Practical			√		√	√	√		√	√	√
		Unit II: Practical			√		√	√	√		√	√	√
	Paper VIII	**Unit I:** Practical			√		√	√	√	√	√		√
		Unit II: Practical			√		√	√	√	√	√	√	

DEPARTMENT OF Microbiology

POST GRADUATE SECTION

AFFILIATED TO THE UNIVERSITY OF CALCUTTA

- **The Course entitled M.Sc in Microbiology was conducted successfully from August 2005 to July 2018 in the Department of Microbiology with full academic autonomy granted by the affiliating University, i.e. the University of Calcutta. The Syllabus was designed under the guidance of the Expert Committee appointed for that purpose. The time line of AQAR 2017-18 rightfully includes the Syllabus of the autonomous course.**

- **The CBCS course under the academic control of the University of Calcutta came into effect from August 2018. The First Batch of PG students following the CBCS Course is awaiting Semester IV examination. Therefore, it is premature to indicate the impact of the projected POs & PSOs in the CBCS syllabus designed by the University of Calcutta.**
  Model Reference: University of Calcutta, Syllabus for Autonomous Course
  M.Sc. in Microbiology at Lady Brabourne College in effect from 2005-06 to 2018-19

The Programme Outcomes (PO) M.Sc. Microbiology Curriculum:

Programme Outcomes Nos	Programme Outcomes (PO)
PO A	To inculcate into the students, the holistic approach not only to the study of the subject, but also to any situation in life in the long run and to provide strong foundation in interdisciplinary approach
PO B	To gather strong, basic knowledge and understanding of the microbiological concepts to support diversification in applied field of microbiology such as biochemical and biomedical, industrial, environment, biotechnology, genetics, agriculture, food etc
PO C	To develop good laboratory skills and a zeal to address a problem from a scientific viewpoint
PO D	To develop excellent communication skills both in written as well as spoken language for developing expertise in good power of articulation while pursuing higher studies , research and industrial exposure.
PO E	To develop the spirit of teamwork, learn to harbour a collaborative approach in workplace and the ability to uphold integrity in work
PO F	To demonstrate key practical skills/ competencies in working with microbes for study and use in the lab as well as outside including the use of good microbiological practices.
PO G	To acquire competence to use microbiology knowledge and skills to analyse problems, to develop the skill of biological data handling as well as statistical analysis of the data

PO H	To become familiar with latest, advanced tools, sophisticated instuments and modern techniques of microbiology and learn the scope for their justified application which will make them capable to set up new start-ups.
PO I	To develop research approaches and aptitudes to meet the scientific gaps in microbiology and allied interdisciplinary or multidisciplinary fields.
PO J	To set career and professional goals based on a clear outlook of the situation and proper career planning process in higher education, as Academician, Industry professionals and environmental activist.
PO K	To ignite young minds to think innovatively and nurture scientific temper as an outcome of attending several awareness programmes, scientific lectures and interactive sessions
PO L	To develop ethical awareness which is mandatory for practicing a scientific discipline including ethics of working in a laboratory, and ethics followed for scientific publishing of research work in future.
PO M	To inculcate visions in students that after the completion of their training in this specialised discipline, they have an important role to play in the newer developments and innovations in the future in the subject for advancement of the discipline and to contribute in the greater benefits of humanity.

Programme Specific Outcomes Nos	**Programme Specific Outcomes (PSO)**
PSO 1	Comprehend the fundamental concepts, core theories, methods and practices in different branches of Microbiology and allied fields of other Biologica; Sciences.
PSO 2	Construct the use of microbial knowledge in genetics, genetic engineering, fermentation technology, medical microbiology and waste management
PSO 3	Identify the ways microorganisms play an integral role in disease, and microbial and immunological methodologies are used in disease treatment and prevention
PSO 4	Devise and execute safe laboratory experiments following the research ethics and presentation of reports.
PSO 5	Be equipped with interdisciplinary skills, computational and statistical tools and techniques related to Microbiology
PSO 6	Exhibit their ideas/knowledge through their involvement in research, internship activities and outreach activities specific to Microbiology
PSO 7	Locate career options in and related field of Microbiology either through competitive examinations or entrepreneurial activities

Mapping of PO & PSO of the University of Calcutta, Syllabus for Autonomous Course
M.Sc. in Microbiology at Lady Brabourne College in effect from 2005-2018-19

Programme Specific Outcomes (PSO) Nos	Programme Outcomes (PO)												
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**
PSO 1	√	√		√			√			√	√		√
PSO 2	√	√	√			√			√	√	√		√
PSO 3	√	√		√			√			√	√		√
PSO 4		√	√		√	√	√	√	√	√	√	√	√
PSO 5		√	√			√	√	√	√	√	√		√
PSO 6		√	√	√	√	√	√	√	√			√	√
PSO 7		√		√		√			√	√		√	√

Programme Outcome mapping for Semester wise Courses in PG Microbiology under University of Calcutta

TABLE I

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)												
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**
Semester I 6 months	**MICRO C11:** Microbial Cell Biology	√	√		√				√	√	√	√		√
	MICRO C12: Environmental Microbiology and Microbial Ecology*	√	√		√				√	√	√	√		√
	MICRO C13: Microbial Genetics		√		√			√	√	√		√		√
	MICRO C14: Biophysical Chemistry and Instrumentation	√	√		√				√	√	√	√		√
	MICRO S11: Microbial Metabolism	√	√					√		√	√	√		√
	Practical*	√	√	√		√	√	√		√	√	√		√

Semester II 6months	**MICRO C21:** Biomolecular structures and their Interactions	√	√					√		√	√	√		√
	MICRO C22: Biostatistics	√	√					√		√	√	√		√
	MICRO C23: Molecular Biology	√			√				√			√		
	MICRO C24: Recombinant DNA Technology*		√		√				√	√				√
	MICRO S21: Evolutionary biology and Biodiversity	√	√		√						√	√		√
	MICRO O21: Enzymes and Reaction Kinetics*	√	√					√		√	√	√		√
	Practical **			√		√	√	√	√	√	√	√		√

TABLE II

COURSE DURATION	**COURSE DETAIL**	**PROGRAMME OUTCOME (PO)**												
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**
Semester III 6 months	**MICRO C31:** Virology*	√	√					√		√	√	√		√
	MICRO C32: Regulation of Gene Expression	√	√		√			√		√	√	√		√
	MICRO C33: Genomics, Bioinformatics and Metagenomics*	√	√		√				√	√			√	
	MICRO C34: Microbial Technology and Industrial Microbiology*	√	√		√		√	√	√	√	√			√
	MICRO S31: Tissue Culture		√	√					√	√	√	√	√	√
	MICRO O31: Medical Microbiology and Microbial Pathogenesis	√	√					√		√	√	√		√

	Practical* **		√	√	√	√	√	√	√	√	√	√	√	
Semester IV 6 months	**MICRO C41:** Immunology*		√		√					√		√		√
	MICRO C42: Eukaryotic Microbiology*	√	√		√					√	√			√
	MICRO C43: Antibiotics	√	√		√	√		√		√	√	√		√
	MICRO S41: Genetics and Genetic Interaction and Genetic Therapy	√	√		√			√		√		√		√
	MICRO S42: Bacterial Taxonomy	√	√		√			√		√	√	√		√
	Seminar	√	√	√	√	√	√	√	√	√	√	√	√	√
	Grand Viva	√	√	√	√	√	√	√	√	√	√	√	√	√
	Practical **		√	√	√	√	√	√	√	√				√

Department of Geography

UNDERGRADUATE SECTION

Model Reference: University of Calcutta, Syllabus for Geography (Honours) (NON-CBCS)

Programme Outcomes Nos	Programme Outcomes (PO)
PO A	**To prepare the students for a successful career in academic and administrative activities. Students are motivated for higher education and to take research as a career**
PO B	**To provide strong foundation in Earth Science as well as Social Science**
PO C	**To develop ideas about different aspects of physical, demographic, social, economic, regional and environmental geography, formulate and analyze complex scientific problems and find out the measures of sustainable development for the survival of the earth's environment.**
PO D	**To develop individual work by preparation individual Project Report, Laboratory Note book, and team work by functioning effectively as an individual or as a member in a group in practical classes, field work for the preparation of Field Report.**
PO E	**Ability to use survey instruments, topo-sheets, aerial photographs, satellite images, application of different Cartographic methods, application of softwares**
PO F	**To develop clear vision in solving different analytical problems of Geography**
PO G	**To develop the ability to prepare effective laboratory notebooks, to conduct field survey and writing of Field Report, Project Report and prepare for effective presentations, and application of those in their academic purpose**
PO H	**As Geography is a interdisciplinary science so helps to develop acumen to work with interdisciplinary groups**
PO I	**To develop the ability to engage in independent and life-long learning of the subject**
PO J	**To engraft scientific temperament in the students and develop interdisciplinary vision to enrich the subject for future**

Programme Specific Outcomes Nos	Programme Specific Outcomes (PSO)
PSO 1	**To educate in basic and emerging aspects of Geography for higher education and application in research of both physical and social Geography**
PSO 2	**To develop capacity, skill to understand the need for lifelong learning to be a competent professional**
PSO 3	**To equip with the knowledge of the assessment of air, water, soil, sound quality to develop quality of environment, application of cartographic techniques, sensing of space with the help of RS and GIS etc**
PSO 4	**To intimat with the knowledge of the subject and application in their field work and future studies**

Mapping of PO & PSO for Geography Honours Syllabus of University of Calcutta

Programme Specific Outcomes (PSO) Nos	Programme Outcomes (PO)									
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
PSO 1	√	√	√		√	√		√		
PSO 2	√	√	√	√	√		√			
PSO 3	√	√	√	√	√	√		√		
PSO 4	√	√		√	√		√	√		

Programme Outcome mapping for Partial Semester wise Courses in Geography Honours under University of Calcutta

TABLE I

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)									
		A	B	C	D	E	F	G	H	I	J
Part I	Module 1 Geotectonic & Geomorphology	√	√	√	√		√	√		√	
	Module 2 Hydrology & Oceanography	√	√	√	√	√	√	√		√	√
	Module 3 Economic Geography	√	√	√	√	√		√	√		√
Papers I & II	Module 4 Practical- Cartograms & Geological Maps	√	√	√	√	√		√		√	√

TABLE II

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)									
		A	B	C	D	E	F	G	H	I	J
Part II	Module 5 Climatology	√	√	√		√			√	√	√
	Module 6 Soil & bio Geography	√	√	√	√		√		√	√	√
	Module 7 Social, Cultural & Political Geography	√	√	√	√		√		√	√	√
Papers III & IV	Module 8 Practical Map Interpretation & Surveying with Instruments	√	√	√	√	√		√		√	√

TABLE III

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)									
		A	B	C	D	E	F	G	H	I	J
Part III Papers V, VI, VII & VIII	Module- 9 Population & Settlement Geography	√	√	√	√	√			√		√
	Module -10 Regional Geography of India	√	√	√	√	√	√		√		
	Module - 11: Philosophy of Geohraphy	√	√	√	√		√				
	Module - 12: Contemporary Issues in Geography	√	√	√	√		√		√		
	Module - 13: Practical Mapping Techniques	√	√	√	√		√				√
	Unit- 14: Practical GIS and Remote Sensing	√	√		√	√		√	√	√	
	Unit- 15: Practical Statistical Techniques	√	√		√	√		√	√	√	
	Unit- 16: Practical Contemporary Techniques	√		√	√	√	√	√	√	√	√

DEPARTMENT OF GEOGRAPHY

POST GRADUATE SECTION

AFFILIATED TO THE UNIVERSITY OF CALCUTTA

- **M.Sc course in Geography was started from 2003 in the Post Graduate Department of Geography as a sister concern of the department of Geography, University of Calcutta. From 2003 to 2008 the M. Sc course of the department was followed the syllabus of Calcutta University. Full academic autonomy of the department was granted by the University of Calcutta in 2009. New Syllabus was designed by the faculties of the department under the supervision of the Expert Committee, appointed by University of Calcutta for this purpose. The time line of AQAR 2017-18 rightfully includes the Syllabus of the autonomous course.**
- **The CBCS course under the academic control of the University of Calcutta came into effect from August 2018. The First Batch of PG students following the CBCS Course is studying in Semester IV, the final semester of M. Sc examination. Therefore, it is premature to indicate the impact of the projected POs & PSOs in the CBCS syllabus designed by the University of Calcutta.**

Model Reference: University of Calcutta, Syllabus for Autonomous Course

M.Sc. in Geography at Lady Brabourne College in effect from 2003 to 2018-19

Programme Outcomes Nos	Programme Outcomes (PO)
PO A	**To prepare the students for a successful career in academic and administrative activities. Students are motivated for higher education and to take research as a career and also participate in different Research organization as Remote Sensing and GIS experts**
PO B	**To provide strong foundation in Earth Science , Environmental Science and Social Science**
PO C	**To develop ideas about different aspects of physical, demographic, social, economic, regional and environmental geography, formulate and analyze complex scientific problems and find out the measures of sustainable development for the survival of the earth's environment.**
PO D	**To develop individual work by preparation of Term Paper, Dissertation paper and team work by functioning effectively as an individual or as a member in a group in practical classes and taking part in field survey for the preparation of Field Report.**
PO E	**Ability to use survey instruments, topo-sheets, aerial photographs, satellite images, and other sophisticated instruments, water and soil testing and application of different cartographic techniques, thematic mapping and application of softwares**

PO F	**To develop clear vision in solving different analytical problems of Geography**
PO G	**To develop the ability to prepare and write effective laboratory notebooks, to conduct field survey and writing of Field Report, Term Paper, Dissertation paper, and prepare them for effective presentations of their project, and application of all techniques in their academic works**
PO H	**As Geography is a interdisciplinary science so helps to develop acumen to work with interdisciplinary groups**
PO I	**To develop the ability to engage in independent and life-long learning of the subject**
PO J	**To engraft scientific temperament in the students and develop interdisciplinary vision to enrich the subject for future**
PO K	**Gain in depth knowledge in the areas environment, population, space, region, Remote Sensing, GIS and climate change**

Programme Specific Outcomes Nos	**Programme Specific Outcomes (PSO)**
PSO 1	**To educate in basic and emerging aspects of Geography for higher education and application in research of both physical and socio- cultural Geography**
PSO 2	**To develop capacity, skill to understand the need for lifelong learning to be a competent professional**
PSO 3	**To equip with the knowledge of the assessment of air, water, soil, sound quality to develop quality of environment, application of cartographic techniques, sensing of space with the help of RS and GIS etc**
PSO 4	**To intimate with the knowledge of the subject and application in their field work and future studies**
PSO 5	**To develop research oriented skills by the preparation of Term paper, Field Report and Dissertation the final semester course**

Mapping of PO & PSO of the University of Calcutta, Syllabus for Autonomous Course

M.Sc. in Geography at Lady Brabourne College in effect from 2003-2018-19

Programme Specific Outcomes (PSO) Nos	Programme Outcomes (PO)										
	A	B	C	D	E	F	G	H	I	J	K
PSO 1	√	√	√		√	√	√	√			
PSO 2	√	√		√	√						
PSO 3	√	√		√	√						
PSO 4	√		√	√	√		√				
PSO 5	√	√	√		√	√	√				

Programme Outcome mapping for Semester wise Courses in PG Geography under University of Calcutta

TABLE I

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)										
		A	B	C	D	E	F	G	H	I	J	K
Part I	Module 1 Geotectonic & Geomorphology	√	√	√	√	√	√	√				
	Module 2 Climatology	√	√	√	√		√		√		√	√
	Module 3 Resource Studies and Its Management	√	√	√		√		√	√	√		
	Module 4 Philosophy of Geography	√	√		√	√		√		√		
Semester I 6 Months	Module 5 Practical				√	√		√	√	√		√
Part I	Module 6 Hydrology & Oceanography	√	√	√	√		√		√	√		
	Module 7 Soil & Biogeography	√	√	√	√		√		√			
	Module 8 Population & Food Security	√	√	√	√		√		√	√		
Semester II 6 Months	Module 9 Settlement Geography	√	√		√	√		√				
	Module 10 Practical	√	√	√		√	√	√				

TABLE II

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)										
		A	B	C	D	E	F	G	H	I	J	K
Part II Semester III 6 Months	Module 11 Social & Cultural Geography	√	√	√		√	√		√	√		
	Module 12 Historical & Political Geography	√	√	√			√		√			
	Module 13 Development Studies	√	√	√		√	√		√			√
	Module 14 Environment Studies	√	√	√		√		√				
	Module 15 Practical	√	√		√	√		√	√			
Part II Semester IV 6 Months	Module 16 Regionalisation and Region- Global & India	√	√	√	√	√			√			
	Module 17 Special Paper-	√	√	√	√	√		√	√			√
	Module 18 Special Paper	√	√	√	√	√			√	√		
	Module 19 Practical (Special Paper)	√	√		√	√		√				√
	Module 20 Practical (General Paper)	√	√	√	√	√	√	√	√	√	√	√

Department of Statistics

UNDERGRADUATE SECTION

Model Reference: University of Calcutta, Syllabus for Statistics (Honours) (NON-CBCS)

TABLE I: PO DETAIL

Programme Outcomes Nos	Programme Outcomes (PO)
PO A	To provide strong foundation in basic statistical methods with the existing knowledge, concepts, techniques, and methodology.
PO B	Make them conversant with the advance methods and concepts appropriate to the discipline
PO C	To identify, formulate and analyze complex problems reaching substantiated conclusions
PO D	Ability to use modern ICT tools and techniques including sophisticated softwares in data-analysis and interpretation.
PO E	Solve cross-discipline-based problems using strategies appropriate to the subject
PO F	To develop communicating ability such as being able to comprehend and write effective laboratory notebooks and design documentation, prepare effective presentations, and give and receive clear instructions
PO G	To prepare the students for a successful career focussed on employability/ entrepreneurship as well as to motivate them for higher education and to take research as a career

Programme Specific Outcomes: University of Calcutta, Syllabus for Statistics (Honours)

TABLE-II: PSO DETAIL

Programme Specific Outcomes Nos	Programme Specific Outcomes (PSO)
PSO 1	Apply knowledge to identify, analyze and evaluate real world issues emerging in varied areas of service sectors /industries related to software and hardware applications as well as in the field of advance research
PSO 2	Develop leadership and managerial skills and understanding the need for lifelong learning to be a competent professional
PSO 3	To equip with front level communication technologies (ICT) for innovating ideas and solutions to existing/novel challenges
PSO 3	Achieve command over the subject to explain importance of data and Statistics system in public life.

Mapping of PO & PSO for Statisticss Hons Syllabus of University of Calcutta

TABLE – III: PO vs PSO MAPPING

Programme Specific Outcomes (PSO) Nos	Programme Outcomes (PO)						
	A	**B**	**C**	**D**	**E**	**F**	**G**
PSO 1	√	√	√		√		√
PSO 2	√			√		√	√
PSO 3	√	√	√	√		√	√
PSO 4	√	√	√		√		

Syllabus: Statistics(Hons) under Calcutta University

TABLE – IV: SYLLABUS DETAIL

	Theory Paper
Part I	• **IA:** Descriptive Statistics • **IB:** Probability Theory I • **IIA:** Linear Algebra • **IIB:** Practical comprising of Papers IA,IB,IIA
Part II	• **IIIA:** Mathematical Methods & Probability Theory II • **IIIB:** Sampling Distribution & Statistical Inference • **IVA:** Official and Economic Statistics & SQC • **IVB:** Practical comprising of Papers IIIA,IIIB,IVA &MINITAB, C
Part III	• **VA:** Multivariate Analysis & Large Sample Theory • **VB:** Statistical Inference II • **VIA:** Designs of Experiment & Sample Survey Methods I • **VIB**: Time Series Analysis & Sample Survey Methods II • **VIIA:** Practical comprising of Papers VA,VB • **VIIA:** Practical comprising of Papers VIA,VIB • **VIIA:** Practical comprising on C • **VIIA:** Data analysis using statistical packages

Corse Outcome (CO) vs. Programme Outcome(PO) mapping for Statistics Honours under University of Calcutta

TABLE V: CO vs PO MAPPING

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PO)						
		A	B	C	D	E	F	G
Part I	IA	√	√			√		
	IB	√						
	IIA		√			√		√
	IIB -Practical			√	√		√	√
Part II	IIIA	√						
	IIIB	√						
	IVA		√			√		√
	IVB-Practical			√	√		√	√
Part III	VA	√	√					
	VB	√	√					
	VIA		√			√		√
	VIB		√			√		√
	VIIA-Practical			√			√	
	VIIB –Practical			√			√	
	VIIIA –Practical			√	√		√	√
	VIIIB –Practical			√	√		√	√

Corse Outcome (CO) vs. Programme Outcome(PSO) mapping for Statistics Honours under University of Calcutta

TABLE VI: CO vs PSO MAPPING

COURSE DURATION	COURSE DETAIL	PROGRAMME OUTCOME (PSO)			
		PSO-1	**PSO-2**	**PSO-3**	**PSO-4**
Part I	**IA**	√			
	IB	√			
	IIA	√			√
	IIB -Practical		√	√	
Part II	**IIIA**	√			
	IIIB	√			
	IVA	√			√
	IVB-Practical		√	√	
Part III	VA	√			
	VB	√			
	VIA	√			√
	VIB				√
	VIIA-Practical		√	√	
	VIIB –Practical		√	√	
	VIIIA –Practical		√	√	
	VIIIB –Practical		√	√	√